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ABSTRACT BOOK

Papers and Posters

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Floodplain dynamics and resettlement in the Peruvian Amazon: escaping vulnerability through gradual migration along the Ucayali River?

Mobility, migration and displacement are an important feature of Amazonian societies past and present. Recent studies on the Amazon have shown the complex interconnections between population movements, environmental knowledge and resource management, and identities. Surprisingly, few studies have examined the linkages between environmental change and migration in rural Amazonia. This paper reports on a study on the links between floodplain dynamics and riverine settlement in the Peruvian Amazon. It documents the process of resettlement of a group of a few households from a lowland agricultural community near Pucallpa, following a large meander cutoff upriver, to establish a new community a few kilometers upstream from the river capture. Drawing on data collected during multiple field visits between 2002 and 2013, I describe how faced with an increased risk of flooding and riverbank erosion in their original community due to the cutoff, these households gradually migrated to an upstream site where they found rich alluvial soils on land that became less susceptible to flooding, while taking advantage of improved access to markets due to river channel shortening. A discussion of whether gradual migration served as an adaptive strategy to escape from the increased vulnerability associated with environmental change is provided.

Keywords: Environmental change, Migration, Adaptation

Jahzeel Aguilera Lara (Universidad Nacional Autónoma de México, Centro de Investigaciones en Geografía Ambiental), Pedro Sergio Urquijo Torres (Universidad Nacional Autónoma de México, Centro de Investigaciones en Geografía Ambiental), and John H. Kelly (University of Wisconsin-La Crosse)

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Prácticas rituales y sacralización del paisaje: Un caso de estudio entre los nahuas de Acatlán, Guerrero, México.

Esta investigación tuvo por objeto comprender la manera en que la connotación sagrada del paisaje emerge a través de las prácticas rituales, por medio del caso de estudio de la comunidad nahua de Acatlán en el estado de Guerrero, México. Se utilizó el método etnográfico para documentar las prácticas rituales y las relaciones que de manera cotidiana establece la población con el espacio que habita. Así mismo se realizó mapeo participativo para indagar en la configuración del paisaje ritual de la localidad. Por último se realizó trabajo de archivo e investigación documental para comprender el proceso histórico de formación del mismo. El paisaje de Acatlán es modelado año tras año a través de sus prácticas productivas y rituales enmarcadas en el ciclo agrícola ritual a fin de asegurar su renovación cíclica. La tradición oral habla sobre el paisaje, sus características, los seres que

lo habitan y la memoria histórica sobre este, subyaciendo a sus relaciones rituales. Así mismo los marcadores espaciales señalan los procesos históricos que le han dado forma al paisaje ritual, mostrando que la noción de lo sagrado es una construcción histórica. Por último, los límites del paisaje ritual se encuentran circunscritos a las fronteras agrarias y han cambiado a lo largo del tiempo con los cambios en la propiedad de la tierra y las relaciones de poder, tanto aquellas que ocurren al interior de la comunidad entre sus miembros, como las que ocurren entre Acatlán y otras comunidades, y entre ésta y otros grupos de poder.

Keywords: Paisaje sagrado, Practicas rituales, Tradición oral

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Geovisualização das emancipações municipais no Vale do Mucuri - MG, Brasil no período de 1870 a 2000

O presente artigo propõe a geovisualização da formação territorial do Vale do Mucuri e as emancipações municipais, com maior ênfase no período de 1870 a 2000. A mesorregião do Vale do Mucuri se localiza no nordeste do estado de Minas Gerais, Brasil, tendo sido ocupada posteriormente às regiões do ciclo minerador. O desbravamento e a colonização do Vale do Mucuri se relacionam à criação da Companhia de Comércio e Navegação do Mucury na segunda metade do século XIX, que tinha como intuito promover a ocupação da região e a ligação ao litoral. O presente artigo reconstrói o processo de formação dos municípios do Vale do Mucuri a partir de dados cartográficos representativos dos diferentes períodos. Estes dados são apresentados em plataforma de geovisualização, de modo a torna-los disponíveis ao público em geral, especialmente à comunidade moradora da região. A geocodificação dos dados a partir da API do Google Maps permite também a apresentação de dados históricos sobrepostos a uma base cartográfica atual e abrangente.

Keywords: Formação Territorial, Geovisualização, Análise Espacial

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The Political Ecology of Global Cosmetic Industry and Conservation: Disconnect between small scale extractivism and industrialization

The purpose of this study is to characterize the Cosmetics Industry implemented in the Brazilian Amazon region and to understand the new liberalization and globalization in manufacturing scenarios originating from non forest timber products (NFTPs) extraction. The paper examines the disconnects between NFTPs projects as sustainable development solutions for peasant farmers and regional and local economic growth in the long run. The

economic potential of plant extrativism in the Amazon as it is linked to global cosmetic industry is controversial. The production and marketing occur within partnerships between local communities and companies, which have had an increasing demand for products and inputs associated to "nature" and more "sustainable" practices. Traditionally, the extracts of these plants have been used by indigenous and traditional communities. Biotechnology is one of the most promising markets in the world economy and as such global bio-prospecting and trade in biological specimens has increased. The variety of commodities and primary products produced in Brazil is large. Plant extrativism became the great Brazilian environmental approach to counteract deforestation in the Amazon. But, is it a viable approach to provide long term sustainability for Brazil peasant farmers? This paper considers the disconnect between NFTP as a sustainable economic development model and the realities of the global industrial cosmetics industry.

Keywords: Non forest timber products (NFTPs) extraction, Cosmetics Industry, Sustainable economic development model

Eugenio Arima

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Is deforestation leaking from Amazonia to the Cerrados?

Reducing carbon emissions from deforestation and forest degradation now constitutes an important strategy for mitigating climate change, particularly in developing countries with large forests. Zero deforestation is now a central piece of Brazil's national climate change plan and research suggests that anti-deforestation policies together with market based mechanisms successfully reduced deforestation in Amazonia. Here we discuss potential indirect land use changes and leakages to the Brazilian cerrado that might result from higher environmental enforcement in Amazonia. I discuss differences in legislation and theoretical rent-based mechanisms that make the cerrado more attractive to agricultural expansion. We provide preliminary field based evidence on whether environmental enforcement is relevant in determining investment location choice. We conclude the presentation by discussing the challenges for REDD+ implementation in Brazil and elsewhere.

Keywords: REDD, Land change, Brazil

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Intersecting geographical and socio-technical imaginaries in decentralizing science, technology and innovation for regional development in Colombia

Some geographers identify state rescaling, in particular decentralization, as a strategy of the neoliberalized(ing) state to "roll out" capitalism, while others suggest that such decentralization could also open up spaces for democratic inclusion, calling for empirical studies of such practices. Such studies have looked at various policy realms, but not at decentralization of science, technology and innovation (ST&I), often considered the foundation of competitiveness and growth, and tied to particular imaginaries of national development and expertise. Literatures on "socio-technical imaginaries" highlight the co-production of political and social goals with national technoscientific projects, including how these imaginaries shape concepts of citizenship, participation and public good, though largely fixed on the national scale. This paper examines the case of a Colombian constitutional reform in 2011, which partially decentralizes ST&I funding with the aim of building regional ST&I capabilities and helping address severe regional development inequalities. While controversial, the new Fund's decentralized governance arrangements may "open up" inclusion in ST&I to new regional actors, including historically marginalized groups. This paper draws on interviews and an analysis of the Fund's projects to critically explore how rescaling ST&I enables inclusion, following feminist scholars' attention to how, and towards what ends, marginalized groups are "included" in formal policy spaces. Secondly, it examines the intersecting geographical and socio-technical imaginaries including meanings of ST&I and expertise, development, centrality and marginality—that unfold in the context of Colombia's post-conflict nation-building project.

Keywords: Decentralization, Inclusion, Imaginaries

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Under-Mining El Salvador's Water Security: The co-production of gold mining and waterscape in El Salvador

In the context of Latin America's "mining boom," El Salvador has become an emblematic battleground where transnational corporations' economic right to extract gold has come into conflict with Salvadorans' human right to clean water. With roughly 80% of its water resources already polluted beyond safe potable standards, and the looming threat of increased environmental stresses (e.g. drought) from Climate Change, El Salvador's water security is in jeopardy. Despite being one of the few countries in the world with a moratorium on metallic mining, El Salvador faces a \$300 million lawsuit in the World Banks' ICSID court for denying Pacific Rim (now Oceana Gold) a permit to exploit its El Dorado gold mine, as well as the constant threat of transborder contamination of its main

water artery, the Lempa River, from mines in Guatemala and Honduras. The issue of water security in El Salvador weaves together the physical geographies (both mineral and hydrological) of the tiny nation, with historically situated socio-political and economic forces operating across local, national and global scales. Rooted in Political Ecology literature on waterscapes, and an understanding of water as a "hybrid nature," this paper investigates how competing rights to access, to use and to pollute water in El Salvador are codetermined by physical and ecological processes (e.g. the water cycle) on the one hand, and socio-political and economic power relations on the other. Focusing specifically on gold mining, this paper highlights the myriad ways that mining and water (in)security are mutually constitutive.

Keywords: Waterscape, Gold Mining, El Salvador

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Using Remote Sensing and Local Knowledge to Map Belizean Recreational Fisheries and their Threats

This research takes a multidisciplinary approach in identifying and analyzing locations of and threats to Belize's marine sport fisheries. The research has three main objectives: 1) using ethnographic participatory mapping data, map the known habitats of important sport-fishing species such as bonefish (*Albula vulpes*), permit (*Trachinotus falcatus*), and tarpon (*Megalops atlanticus*); 2) map threats to these fisheries via an ethnographic survey given to professional fishermen and guides; and 3) using high-resolution (5m) remotely sensed imagery, analyze changes in seagrass habitat in the South Water Caye Marine Reserve. Locally informed spatial diagnostics of marine ecosystems is a valuable tool in analyzing the sustainability of Belize's fisheries. A compilation of spatial participatory fisheries data is digitized and presented. Preliminary image analysis suggests a significant decadal decline in seagrass cover in the South Water Caye Marine Reserve, while participatory mapping demonstrates that gill-netting and illegal fishing practices pose the biggest threats to the saltwater recreational fishing industry in Belize.

Keywords: Belize, Seagrass, Participatory Mapping

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Landscape Cognition and Smallholder Food Security in Northern Nicaragua

In regions most vulnerable to climate change, smallholder farmers experience severe crop loss, exacerbating food insecurity. A rich literature about farmers' adaptation strategies

and resilience engages the multi-faceted nature of decision-making related to crop management. However, few studies look at the role of landscape cognition (LC) in farmer decision-making. In geography, LC incorporates studies of physical and biological processes and also considers cultural influences on human responses to, or management of, a landscape. LC is useful for referring to farmers' actively produced, experiential knowledge of landscape patterns and processes that affect crop production. Within conceptual frameworks of human-environment interactions and social-ecological systems, my research explores farmers' LC related to food security, examining the cognition-management relationship in northern Nicaragua, a region dominated by smallholders, producing vegetables, grains, and coffee for domestic and export markets. The area recently suffered the most severe El Niño season on record. I used participant observation, semi-structured interviews, transect walks, and farmer-drawn field plans with thirty farmers to explore farmers' LC and their management of landscape variability. Findings demonstrate that farmers carefully manage variability and heterogeneity in their landscape to ensure food security, balancing elements such as soil moisture and texture, gradient, and temporal precipitation patterns to ensure consistent harvests of staple crops. A better understanding of LC enhances understanding of farmer decision-making and adaptation strategies. Results suggest that development programs can craft climate change adaptation and resilience programs in such a way to capitalize on farmers' LC, specifically in relation to variability and heterogeneity.

Keywords: Landscape cognition, Food security, Landscape variability

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Transnational Family Reunification: Central American and Mexican Youth Migration to the United States

Since 2011, there has been an unprecedented increase in the number of unaccompanied migrant children fleeing violence and poverty from Central America's "northern triangle" and Mexico. This study endeavors to understand this migration through the lens of transnational family migration. Using a theoretical framework informed by life-course stage and transnational parenting, this study examines the intersectionality of gender, age, care arrangements, and legal status to understand this extended emigration of Central American and Mexican youth to the United States. This paper analyses survey and interview data conducted in Mexican border cities in Tamaulipas in June 2015 to explore underlying factors that guide migrant youth's decisions even as they respond to well-documented drivers such as violence and deprivation in their home countries and along the migrant route. It explores the intersecting influences of transnational family migration, transnational parenting and parents' legal status as key factors in understanding the recent migration of Central American and Mexican youth to the United States.

Keywords: Migration, Transnationalism, Central America

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An Environmental History of the forgotten Río Grande in the former Panama Canal Zone, 1520- 1950

This paper is an examination of the history of environmental change in the defunct Río Grande river valley in the former Panama Canal Zone. Although the river played as big a role as the famous río Chagres in the materialization of the vision of the Canal, and an even bigger one in the capital city's urban morphology, it has been neglected by Panamanian historiography. By mining secondary sources and engineering records, this study provides a narrative of the historic river's role in the formation of the so-called interoceanic corridor through the isthmus of Panama from 1521 to 1950. More importantly, however, as a case study of river histories in Latin American environmental history, this understudied, Pacific-draining river illustrates how nature and non-human nature made Panama's strategic transit region into a loci for material flows over time. The Rio Grande played a vital role in the establishment of the Spanish colonial mule road during the colonial period. The nineteenth century ushered in the industrialization of the corridor, initiated with the construction of the Panama Railroad by American capitalists. Great advances in hydraulic technology led to the first serious canal building efforts in the area, with the French effort succumbing to an unyielding nature. The Panama Canal, built by the US government, led to a radical reorganization of the area's agroecosystems. This thesis applies the concept of social metabolism and the "hydroscape" to understand socioecological change in central Panama, and especially Panama City, from the Conquest to the twentieth century.

Keywords: Environmental history, Panama Canal, Rio Grande

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Mining in natural protected areas in Mexico

For a number of federally-managed natural protected areas (NPAs) in Mexico, mining is officially permitted to be practiced within their limits. The fact that mining, which inherently involves the permanent transformation of landscapes and ecosystems, is considered compatible with nature conservation warrants a close assessment of the regulatory criteria and instruments at work. In this paper we first present an overview of what sorts of mining are permitted and actually carried out within Mexico's federal system of NPAs, according to official records. We also describe the relevant regulatory instruments

involved (environmental laws and regulations, and specific individual NPA management programs). We then identify and discuss both categorical contradictions and observable aspects (from our own and others' research) resulting from this aspect of Mexico's conservation policy. We focus our attention on so-called "special-use sub-zones", the zoning category used to designate where mining is permitted. These may be understood as either "contained-sacrifice sites" or "conservation-compatible sites". Regarding the first interpretation we show (mainly through spatial analysis) how in some cases impacts are not duly contained, or how special-use sub-zones are otherwise defined disregarding key elements of the environment intended to be though an NPA. The second interpretation ultimately leads to debates regarding the possibility of sustainable mining, of which we discuss its diverse definitions and connections to mining in NPAs. Mexico's conservation policy evidently does not reject this possibility but has not clearly outlined what such mining would specifically entail.

Keywords: Mining, Natural protected areas, Mexico

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Practicing environmental law enforcement in the oil and gas sector: Results from the daily of environmental agencies in post-neoliberal Ecuador

This paper presents results from an empirical study on the conditions for environmental law enforcement in the oil and gas sector taking Ecuador as a case study. In 2008, the Ecuadorian state went through a substantial re-structuring in the process of developing a new national constitution: the oil industry was nationalized while the Rights of Nature became legally integrated into its text. Since then, the budget as well as the regulatory competence of the Ecuadorian Ministry of Environment increased significantly. The overall question of this paper asks how far these institutional changes have reached the actual enforcement of environmental laws in the oil and gas sector. More specifically, it asks: a) how and why/why not have these changes influenced the ability of the responsible environmental agencies to detect environmental damages and environmental breaches?; and b) how and why/why not did these changes influence their ability to react to potential detection in terms of the reparation and sanctioning of damages? The paper's methodological approach consists in a comparative analysis of the operations of the Ecuadorian Ministry of the Environment at the national and sub-national levels between the years 2005 to 2015. It combines an ethnographic research approach with spatially sensitive analysis of statistical data and official documents. The purpose of this paper is to assess the consequences of recent institutional changes in environmental governance in Ecuador in order to determine ways to reduce negative impacts of oil and gas extraction

Keywords: Extractive industries, Environmental governance, Post-neoliberalism

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Race, class, and gender in Costa Rica's "Green Development"

Green development is frequently used as a term to identify a suite of policies that attempts to improve the economic well-being of a country and reduce poverty while simultaneously protecting the natural environment. These policies are characterized by initiatives such as payments for ecosystem services and ecotourism. Drawing from an in-depth review of literature, I argue that "green development" policies and discourse are based in a neoliberal rationality and inherently impact people of different races, classes, and genders differently. Despite the supposed neutrality of these policies (e.g. preserving the environment and improving the economy for all), they are built upon neoliberal principles of individualism, private ownership, and consumerism which benefit specific groups of people over others. Using Costa Rica's innovative and proactive policies for environmentally-friendly development as an example, I show how experiences of green development policies and projects have been highly varied by race, class, and gender. I argue that this variation should be expected based on the very tenets of green development. Finally, in addition to an exploration of its raced, classed, and gendered dynamics, I also examine how individuals' specific engagements with these policies leads to a continuous redefinition and reshaping of green development, and environmentalism more broadly, in the Costa Rica.

Keywords: Green development, Neoliberalism, Intersectionality

Christian Brannstrom (Texas A&M University), Adryane Gorayeb (Universidade Federal do Ceará), Jocicléa de Sousa Mendes (Universidade Federal do Ceará), Caroline Loureiro (Universidade Federal do Ceará), Antonio Jeovah de Andrade Meireles (Universidade Federal do Ceará), Edson Vicente da Silva (Universidade Federal do Ceará), Ana Larissa Ribeiro de Freitas (Universidade Federal do Ceará), and Rafael Fialho de Oliveira (Universidade Federal do Ceará)

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Is Brazilian wind power development sustainable? Insights from a review of conflicts in Ceará state

Brazil's wind energy program is a successful public-private sector response to an electricity supply crisis in 2001. Evidence is accumulating that environmental impacts, which lead to territorial conflicts, livelihood erosion, and political responses, contradict sustainability claims of wind power development. We synthesize conflicts emerging in coastal Ceará state, a pioneer in Brazil's rapid development of wind power. Environmental impacts caused by wind farms, which locate on dune fields and other coastal systems, create conflicts by denying traditional communities access to resources that sustain livelihoods and cultural identities. Resource-access conflicts produce political responses that seek mitigation measures, but may escalate into a wider political challenge to continued development of

wind power. We highlight the importance of land-tenure policies to assure the territorial integrity of traditional communities in areas targeted for wind power implementation. Analysis of conflicts supports suggested solutions for governments, firms, and traditional communities.

Keywords: Wind power, Community, Resource access

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Hydrogeomorphological Factors Influencing Distributions of Cichlid Nesting Sites in a Mesoamerican River System

This project aims to determine what hydrogeomorphological factors compose the preferred nesting sites of native cichlid species in an inland Mesoamerican river system and to document the extant population of invasive African tilapia in the river. Fieldwork was conducted on the Bladen River in southern Belize, with most of the work focused upriver from the Belize Foundation for Research and Environmental Education (BFREE) in the Bladen Nature Reserve. Nesting sites of four native cichlid species and location of tilapia were recorded from known locations on shore. An observer swam in longitudinal transects and held a target over points of interest, and a recorder used a laser range finder and digital compass to document the locations. Hydrological and physical characteristics were defined for transects of 20 meter intervals through the study reaches, including current velocity, channel shape, sediment type, and relative fish cover. Nest locations and physical variable data will be used to construct a spatially explicit habitat model using a maximum entropy approach. Ultimately, the results of this project could reveal vulnerabilities for cichlid species in a river system that is under the threat by global climate change and potential invasion of African tilapia.

Keywords: Cichlids, Habitat Modeling, Invasive Species

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Enfoque de Genero en las Politicas Publicas de Cambio Climatico en el Ecuador

El cambio climático no es neutral desde la perspectiva de género. El Acuerdo de París, adoptado en diciembre del 2015 por la Convención Marco de Naciones Unidas sobre Cambio Climático (CMNUCC) hace un especial llamado hacia la incorporación del género en la lucha frente al cambio climático. En este contexto, mi investigación busca analizar en qué medida las políticas públicas de cambio climático en el Ecuador han incluido el enfoque de género, como un requisito fundamental para el accionar frente a la realidad antes mencionada. Metodológicamente, la investigación uso el software Atlas ti para la

codificación de textos y discursos en un proceso de revisión que incluyo la consulta a todos los organismos gubernamentales del país afines al tema, así como gobiernos locales y la cooperación internacional. Los resultados iniciales de mi investigación indican que existe una limitada inserción de género en las políticas nacionales, regionales y locales. Estos hallazgos son sumamente relevantes para el país, pues representan retos y oportunidades puntuales, importantes y urgentes para el tratamiento de género en los procesos de planificación estatal. Se espera brindar con esto un aporte importante hacia la formulación de las Estrategias Nacional, Provinciales y Locales de Cambio Climático, el Plan Nacional de Adaptación, los documentos nacionales entregados a la CMNUCC (Comunicaciones Nacionales, Contribuciones Previstas Determinadas a Nivel Nacional).

Keywords: Ecuador, Genero y Cambio Climatico, Politicas Publicas

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Farmer response to ethanol expansion: A panel data analysis of sugarcane ethanol production in the Brazilian Savanna

The Brazilian Savanna (Cerrado) is an important biome, being regarded as a global biodiversity hotspot due to the anthropogenic modifications of the environment, especially native vegetation conversion to cropland and pastureland. Even under this circumstance, the Cerrado continues to be the frontier for agricultural production in Brazil. In addition, Cerrado is the new frontier for ethanol production, which uses sugarcane as feedstock. The addition of a new crop to this threatened biome has raised concerns over the sustainability of sugarcane and ethanol production. Advocated by researchers, the conversion of pastureland to sugarcane has been stimulated by the Government as an alternative to reduce the environmental impact of sugarcane production because it spares the direct conversion of native vegetation. However, these studies do not investigate the drivers of farmers' land-use decision process leading to sugarcane expansion. The goal of this paper is to analyse farmer decision between alternative agricultural land use allocation. The study area is formed by the counties in the states of Goiás and Mato Grosso do Sul. The period of analysis ranges from 2006 to 2013, covering the period of rapid expansion of sugarcane in these states. Farmer land change decision is modelled using a panel data analysis technique, using crop prices, distance to road, distance to sugarcane mills, previous land use, suitability for sugarcane production, as explanatory variables. Preliminary results indicate that farmers located closer to sugarcane mills have a higher probability of converting cropland to sugarcane.

Keywords: Land Use Decision, Biofuel, Land Change Model

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Competing Visions of Place: Environmental, Economic, and Sociocultural Sustainability in Coastal Jalisco

The southern Jalisco, Mexico coast is experiencing a transition as much of the beach-front land is being privatized for luxury resort development. In this paper I consider sustainable development in the coastal community of La Manzanilla del Mar in the context of this shifting social and material landscape. La Manzanilla is a small community and tourism destination of approximately 1,700 residents including an estimated 300 resident lifestyle migrants. Over the years the town has grown and transformed into a destination for Mexican nationals, international tourists, and a growing number of foreign resident lifestyle migrants. Ethnographic research suggests lifestyle migrants, local youth, conservationists, cosmopolitan visionaries, and those that fall in between multiple categories of resident have a range of conflicting ideas about sustainability in La Manzanilla. Depending on multiple vectors of position, they prioritize economic, environmental, and sociocultural sustainability with varying and conflicting attention and significance. I discuss the complex relationship between lifestyle migration and economic sustainability, including displacement and strategies to combat displacement. I present some examples of youth entrepreneurial and developmental initiatives in La Manzanilla and argue that these ideas, plans, and projects may be seen as viable alternatives to both discourses of social and environmental sustainability that propose halting development and closing the door to more lifestyle migrants and tourists, and to discourses of economic sustainability that propose large scale tourism development.

Keywords: Sustainability, Lifestyle Migration, Community Development

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Growing export soy at small and medium scales in eastern Paraguay

A number of smallholder communities in South America have fought the expansion of mechanized soy for reasons that include encroachment into their territories, exposure to agrotoxins, and the difficulty of integrating an industry that requires substantial financial and technological inputs. In Paraguay, one of the largest soy exporters in the world, broad-scale soy cropping continues to expand, in many cases taking over smallholder lands and displacing campesino families to slums in the capital, Asuncion. The present paper, by contrast, reports on emerging alliances between smallholders and soy patrons for the sustained production of export soy in the buffer zone of a protected area in eastern Paraguay. Based on interviews held in indigenous, campesino, and Mennonite communities in 2015 and 2016, this study finds a diverse group of small- and medium-scale farmers growing export soy and, in doing so, downscaling the Brasiguayo—broad-scale—model

that is prevalent for soy cropping in eastern Paraguay. While these emerging models provide viable livelihood alternatives to smallholders in the short term, the paper also discusses factors that question the sustainability of soy cropping at any scale in the study area.

Keywords: Soy, Smallholder, Paraguay

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Population, Neo-Malthusianism, and Public Health: Latin American Perspectives

Neo-Malthusianism has long been a focus of concern in human geography, particularly in political ecology, development geography, and studies of biopolitics. Despite the influence of neo-Malthusian thinking in international development and environmental policy during the Cold War, this story is often told from a US-centered perspective, with population control policies seen to roll out from the world geopolitical centers to the "Global South" via development institutions such as USAID and the UN. Latin American perspectives on the population control question are seldom considered, except to suggest that the Catholic Church provided institutionalized opposition to the expansion of family planning services. In this paper, using an intellectual history approach, I explore how population questions were framed in Latin America in the first half of the twentieth century. I focus on the relationship between public health crises and pro-natalist policies; the influences of the eugenics movement (especially in Argentina, Brazil, Mexico, and Cuba) in supporting national population growth as a biopolitical strategy; anarcho-feminist thought of the 1930s, which stressed the emancipatory potential of fertility control and new social roles for women; and Josué de Castro's research on the causes of famine and malnutrition in northeastern Brazil in the 1940s, which took a structuralist approach and explicitly rejected neo-Malthusian and related environmentally determinist approaches to understanding the causes of poverty and hunger. By the 1950s, embrace of modernization theory and demographic transition theory across the region led to the acceptance of Malthusian thinking in such initiatives as the Green Revolution and the creation of demographic research centers.

Keywords: Public health, Population, Neo-Malthusianism

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Urban Rain Forest: Amazonia Industrialization and its links to Urbanization

The scenario is the spatial modification in the City of Barcarena, part of the Belem Metropolitan Area in the State of Para, in the heart of Brazilian Amazon. The new urban

face of the Amazon, where towns and cities shelter over 80% of its population, has been dramatically changing over the last 30 years by different drivers. While the forest goes down, industrialization goes up, supported by national policies and large infrastructure projects such as dams and roads and ports, to produce energy and transportation that exports forest dna abroad. From 1980s, when the port of Vila do Conde started operated and Tucuruí Dam first produced energy to fulfill requirements for the aluminum industry that would lead the future industrial hub, Barcarena is the classic example of intensive concrete growth in the middle of the forest, rapidly suffering from changes in its social, economic and environmental profiles. Industrialization has led this city in the past four decades, but how has improved the livelihoods of its inhabitants? How much has Barcarena altered its land use and land coverage? How can we better assess the effects of industrialization in the Rain Forest? This presentation attempt to provide information to answer those questions.

Keywords: Amazon, Urban Areas, Industrialization

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Land Change and Farmer Displacement: Mapping the Environmental Impacts of Soybean Agriculture in Amazonia

Brazil is the world's second largest carbon dioxide emitter from land use activities. Most of recent Amazonian deforestation has been attributed to agricultural expansion, especially soybean farming. In this paper we focus on land use and land cover change outcomes resulting from ground-based mechanisms whereby one form of land use gives way to another on the basis of land transfers between soybean farmers and smallholders. A fieldwork campaign undertaken in 2015 in an important agricultural frontier in the central Brazilian Amazon revealed that from 2001 to 2014 soybean farmers expanded crop fields by purchasing and infilling smallholdings. Displaced smallholders migrated to cities, vicinities or to hinter lands in forest frontiers. To verify land change outcomes of such dynamics, we ground-traced their outmigration path and performed a remote sensing analysis on the converted holding and of the property acquired after the sale. The results show that displaced smallholders carried deforestation to new forest frontiers, in particular those that resettled in government settlements, this dynamic was particularly strong from 2001 to 2005 with the arrival of soybean farmers and regional consolidation as an important agricultural hub and soybean export route. Deforestation in new frontiers exemplifies a leakage effect of land use policies that must be taken into account by mechanisms of mitigation of deforestation by agriculture, such as the soybean moratorium and initiatives like REDD.

Keywords: Amazonia, Soybeans, Displacement, leakages

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Impacts of wind power on the Cumbe community, northeastern Brazil

Wind energy in Brazil increased dramatically since the 2001 electricity crisis, reaching 9.4 GW of capacity in May 2016 through aggressive public policies including fiscal subsidies, auctions and subsidized credit. However, many conflicts have developed around wind farms, which are mainly located in coastal areas and near traditional communities, which are often “invisible” to economic and political elites. Land tenure insecurity and poor use of economic instruments have produced negative results for many communities, which have responded with requests for mitigation policies. The Cumbe community, located in the Aracati municipality in Ceará, Brazil, is comprised of 167 families who live mainly from artisanal fishing, agricultural, and handicrafts. Cumbe has been one of the sites in recent years most well studied regarding conflicts following the 2007 installation of the Canoa Quebrada, Enacel and Bons Ventos wind farms, which have combined capacity of 138.5 MW from 67 wind turbines and occupy 1,546 ha. Even through many studies have been carried out in Cumbe, little is known about how wind farms have affected subsistence activities of the community. Here we report on initial results of a livelihood survey aiming to measure various aspects of the conflict, such as effects of the wind farm on environmental resources, impact on conflicts between family groups, comparison to conflicts regarding shrimp farms, and the importance of land title to land struggles and maintenance of lifestyles. The study contributes to improving the visibility of conflicts originating from the installation of large infrastructure projects on traditional territories.

Keywords: Wind power, Brazil, resource access

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Mangrove Change Detection and Habitat Mapping in Ciénaga de Zapata, Cuba, Using Landsat Imagery and Local Knowledge

The mangrove stands of Ciénaga de Zapata, Cuba, are of critical importance to the island from both biodiversity and ecosystem service perspectives. The peninsula is home to more than 1,000 invertebrate species, more than 80 percent of the island's total bird species, and numerous fish, mammals, and reptiles, including the Cuban crocodile, a species found only in Cuba. Zapata's mangroves support bonefish, tarpon, and permit populations that are central to the local people's subsistence, commercial, and sport fishing operations. Despite the ecological importance of Zapata's mangroves, little work has been devoted to

monitoring changes in the forests' extent or distribution throughout the past two decades. This project employs remote sensing and geographic information systems (GIS) analysis to quantify and map areal changes in Zapata's mangrove forests from 2000 to 2016. Habitat zones mapped by local stakeholders are used to measure and compare mangrove change at the scale of individual species' preference areas. Ciénaga de Zapata is protected as both a national park and biosphere reserve, but changing socio-political dynamics between the United States and Cuba could precipitate rapid development along nearby coastal areas in coming years. In addition to mapping 16 years of largely undocumented mangrove change in Zapata, the results of this study provide baseline information on the cusp of a period of potentially substantial change and help Zapata park officials prioritize the allocation of conservation efforts and resources to habitats that have measured greater rates of mangrove decline.

Keywords: Remote sensing, Conservation, GIS

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A troubling triad: Security, development and fear in Guatemala

This paper investigates the long-term ties between security, development and fear in Guatemala. I draw on semi-structured interviews with development practitioners, participant observation, and textual analysis of archival and contemporary documents to compare the strategies, language and geographies of past and present development initiatives in the country. I highlight not only the endurance of the security-development nexus, but also problematize its enduring linkages to violence and the racialized rhetoric of nationalism. Furthermore, I tease out the multi-dimensional elements of fear which underlie and articulate with development discourse. I argue that the confluence of multiple mechanisms of fear, including the legacies of violence, surveillance and coercion, continue to structure development encounters in profound ways. By examining development practitioners' perceptions of fear's impact on development encounters at the local level, I highlight how tropes of broken communities and torn social fabrics are deployed in problematic ways. Emphases on social cohesion, solidarity and behaviors which "better contribute" to development can work to mask the racialized elements of these discourses and ultimately serve to silence and delegitimize indigenous demands for structural change and justice in the country.

Keywords: Development, Security, Fear

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Information and infrastructure: Overcoming the Challenges of Community-managed Water and Sanitation in Cali, Colombia

Community participation has been touted as a way to improve living conditions and the outcomes of particular projects. Such participation, proponents argue, is more likely to result in technologies and policies appropriate for a specific context and to increase community interest and involvement over the long term. Water supply and sanitation services in the rural areas near Cali, Colombia are provided by community organizations, who have built and extended their infrastructure systems through autonomous efforts as well as the development of support networks with governmental and non-governmental institutions. This study analyses the processes through which these networks are formed and used to facilitate the spread of information and access to resources, which reduces their vulnerability in the face of numerous challenges. Though these processes have resulted in greater water and sanitation service coverage and community empowerment, complex legal and political frameworks undermine their potential and ensure dependence on external actors. The results of this study therefore underscore the potential for community participation to improve living conditions, but also the importance of designing policies that bolster rather than hinder these processes.

Keywords: Water, Participation, Colombia

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Local market development and market access of indigenous and folk communities in the Peruvian Amazon

The Peruvian Amazon is a "data poor" region of growing policy interest over the prospects for economic development based on resource exploitation that are socially inclusive and sustainable. Remarkably little is known about the nature of local market development and market access over this vast region. In this paper we draw upon a large scale census among 919 communities in four river basins of the Peruvian Amazon to describe key economic features related to local product and labor markets, including community size, market accessibility, market prices, and livelihoods. Contrasts are made between indigenous and non-indigenous communities in access to market and market conditions, and across basins. We find highly heterogeneous economic conditions which suggest that a "one size fits all" economic development policies for the region are problematic.

Keywords: Peru, Local markets and trade, Ethnicity

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Mexican Transitions: Tlatelolco, stories of progress, and becoming adult in Mexico City

This paper examines a relay between memory and spaces of politics in Mexico City, the capital of a country long examined for its "democratic transition." My research in post-1968 Mexico City suggests that popular memory of the events of 1968 lends consistency to how and where young people today practice politics. The disruptive force of student-popular protest in 1968 is, in cultural production and in rituals of commemoration, often reduced to a proper name for repression. "Tlatelolco" refers to 2 October 1968, when military and paramilitary forces opened fire on thousands of people who had assembled in the Plaza de las Tres Culturas. I argue that a tendency to substitute this signifier for the event of 1968 facilitates the articulation of at least two stories of progress that give shape to contemporary spaces of politics. On the one hand, I follow recent cultural studies of Mexico to argue that this tendency supports a state-centric narrative of democratic transition, once thought achieved with electoral defeat of the PRI, wherein traumas of past violence will be redeemed through benevolent state intervention in the future. On the other hand, I refer to ethnographic fieldwork to argue that "Tlatelolco" naturalizes a second transition—a life-course transition—according to which young people in Mexico City will predictably pass through a stage of youthful contestation proper to becoming an adult. This second story is sometimes articulated in a language of anti-stateness, but it paradoxically complements the story of democratic transition and sustains governable social-spatial order.

Keywords: Memory, Politics, Young people

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Integrating field and remote sensing analyses of aboveground biomass dynamics during secondary forest regeneration in Costa Rica

Previous research has revealed that there is high density and high spatial variation in aboveground biomass in tropical forests, but insufficient research has been conducted to determine the controls that may influence this variability. This study aims to evaluate forest age, composition, and structural characteristics to determine their influence on aboveground biomass. Emerging remote sensing technologies were used and calibration methods will be developed to generate a regional allometric equation for estimating aboveground biomass. Specifically, a consumer-grade light detection and ranging (LiDAR) sensor was utilized. This research took place in one of the most biodiverse ecosystems in

the world, the lowland wet tropical rain forest of the Southwestern Pacific region of Costa Rica. This study will provide a more comprehensive understanding of aboveground biomass dynamics in tropical forests, and will develop remote sensing methods for estimating aboveground biomass from forest age, composition, and structural characteristics. These two outcomes will be of great use for future and ongoing efforts for climate mitigation via deforestation reduction and forest restoration policies. The data are currently being analyzed to determine the results, which will be ready by the time the conference takes place.

Keywords: Remote sensing, Biomass, LiDAR

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Mangroves in Campeche, Mexico: Forest Cover Trends in a Critical Coastal Ecosystem.

Mangrove forests play a critical ecological and economic role along many tropical and subtropical coastlines. These roles include providing habitat for important economic species such as shrimp and mitigating the impacts of storms. However, throughout their range, mangroves are declining at an alarming rate, possibly even more rapidly than inland tropical forests. The rate and causes of such changes vary from region to region, but often include unregulated coastal development, charcoal production, and siltation from inland deforestation. Mangrove forests in Campeche, Mexico, are critically important to the local fishing economy, providing habitat that supports the wild-caught shrimp industry and tarpon sport fishing economy. We analyzed Landsat satellite data from 1999 and 2016 using an unsupervised classification approach to monitor and measure mangrove forest cover changes arising from both natural and anthropogenic forces along the coast in Campeche. Mangroves in Campeche are unique both in that this ecosystem is partly bordered by a large urban center (Campeche city), and the city and neighboring natural park are UNESCO World Heritage Sites. As a result, this ecosystem faces human impacts and pressures not usually associated with coastal swamp forests.

Keywords: Mangroves, Forest cover changes, Remote sensing

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Commodifying Unconventional Fuels: Socio-Environmental Implications of Fracking Activities in the Vaca Muerta Shale Deposit in Northern Patagonia, Argentina

The objective of this paper is to explore the political economy of hydraulic fracturing in the Vaca Muerta Shale deposit in the Province of Neuquén in northern Patagonia, Argentina. In particular, this paper studies the social and environmental impacts associated with fracking activities in the region, especially the rural community of Añelo, where the large majority of the infrastructure to support fracking activities is being developed. In doing so, this paper critically analyzes the socio-environmental implications of fracking activities and political economic strategies used to control underground deposits in the region. The paper, grounded in political ecology and political economy of nature, endeavors to unravel the socio-ecological contradictions that emerge from the complex relations between nature, energy, and society in Añelo. By analyzing the relationships between national strategies to secure energy sovereignty, provincial government responses to adapt to these changes, and everyday lives of citizens in Argentina's community of Añelo, this extensive, empirically grounded analysis will illuminate the myriad complexities inherent to issues of access to and control over unconventional deposits, the commodification of shale gas, and the socio-ecological impacts associated with their extraction, transportation, and distribution in a changing energy landscape. The research is based on four months of intensive fieldwork in the summers of 2015 and 2016 in Buenos Aires, Neuquén, and Añelo and uses a mix of qualitative methods such as archival work, document analysis, semi-structured interviews, and participant observation.

Keywords: Hydraulic fracturing, Energy sovereignty, Argentina

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Forced migration, clandestine cattle and community forestry: Unraveling the spatial paradox of deforestation in Guatemala's Maya Biosphere Reserve

In Guatemala's Maya Biosphere, a spatial paradox defines conservation efforts. In the western half of the 8,300 square mile reserve, national parks with the strictest land use restrictions have experienced some of the highest deforestation rates in the world, while deforestation rates are much lower in the eastern half home to community and industrial forest concessions. This paper argues that three principal dynamics have combined since the reserve's creation in 1990 to produce this paradoxical conservation landscape. The first dynamic is civil war (1960-1996) and post-war practices of land dispossession and forced migration of indigenous Maya and ladino (non-indigenous) peasants. These violent practices occurring outside of the reserve prompted state-sanctioned and then "illegal" colonization of northern Guatemala's forests by the country's poor and landless. The second

is cattle ranching in the reserve's western half that is often affiliated with criminal organizations who use ranching to launder money and traffic drugs. Third, conservation of forest cover in the eastern part of the reserve reflects twenty years of successful community forestry efforts in one of the world's largest communally managed forests. Unpacking the surprising links between land tenure, land use and conservation outcomes in and outside of the reserve yields important policy insights and implications. The case of Guatemala's Maya Biosphere illustrates that environmental policy in the region is inseparable from drug policy and counter-narcotics efforts, and that land dispossession and forced migration occurring outside of the reserve dramatically impact the protected areas' ecologies.

Keywords: Deforestation, Community forestry, Forced migration

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Northern Mists Visited: Part 2

In his most non-Latin American book, *Northern Mists*, Carl O. Sauer waxed eloquently on who came to the Americas from Europe prior to 1492. In so doing, he also traced backwards in time the origins of knowledge about the New World and transatlantic voyages leading up to that all-important date. His work was based on documents, sagas, and legends. Not undertaken was fieldwork, a hallmark characteristic of the Sauer tradition. Forty years after the book's publication, we visited Newfoundland and Labrador to explore some of Sauer's ideas in the context of research conducted by others in the intervening period. A report of this study was presented at the 2009 CLAG meeting in Nicaragua. Ten years further on, one of us (WED) visited Ireland in order to better understand St. Brendan and his descriptions of what may be the earliest journey to the Americas. This paper reports on the findings of that field study.

Keywords: Historical geography, Pre-Columbian trans-oceanic contact, St. Brendan

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Dams, displacement and development: Perceptions from Río Negro, Guatemala

Guatemala's history is plagued by development projects that result in displacement, violence, and increased marginalization of its Indigenous and non-Indigenous populations. In order to make way for development initiatives such as the production of bananas, African palm, coffee and sugar cane; the extraction of metals such as gold and nickel; or, in this specific case, the construction of a hydroelectric dam, the land-based, predominately

Maya campesinos are systematically uprooted from the lands of their birth, and launched into uncertainty. Using the case of the Chixoy Hydroelectric Dam, constructed between 1978- 83, this book examines the effects of displacement on the former residents of Río Negro, a community violently removed and nearly eliminated by the military and paramilitary. Through the use of open-ended interview discussions, or testimonios, I attempt to illuminate this specific incident of displacement and violence and discuss the outcomes thirty years later. My findings, based on fieldwork conducted January through April 2009, suggest that the majority of survivors from the massacres that took place are still adversely affected from the destruction of their families and livelihoods, and that the return to a more traditional Maya-Achí way of life is beneficial for personal and community restoration. I conclude that despite the unique circumstances pertaining to this event, above all its association with the 36-year-long internal conflict, the same struggles over land and human rights continue into the present""and if policies are left unchanged, in both international development agencies as well as the Guatemalan government, clashes of this nature will only increase in time.

Keywords: Guatemala, Development, Violence

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Exploring Borderlands: A dugout canoe trip along the Belize-Mexico border

The Rio Hondo creates the border between Belize and Mexico, and has a rich environmental and cultural history. It is the most northern river to reach the coast in the Yucatan Peninsula, and is flanked by wetlands and important ecosystems. The surrounding region contains multiple ancient Maya sites, and indications of extensive and intensive ancient land use. This includes the earliest evidence of both agriculture and wetland agriculture in the Maya world. These factors likely made this area a breadbasket for the Maya, and the Rio Hondo an important trade route for the goods produced. Despite its importance, this river has not been well-researched. We created and utilized a modern dugout canoe to assess the feasibility of riverine trade. Synchronously, we collected geographic and environmental data in order to better define and understand this border region. These data facilitate understanding of this understudied, but important river system and border.

Keywords: Belize-Mexico border, Ancient Maya, Waterways

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Can the Use of a Specific Species Influence Habitat Conservation? Case Study of the Palm *Iriartea Deltoidea* in Northwestern Ecuador

The Mache-Chindul Ecological Reserve, an area of interest for conservationists and development groups as it is one of the hotspots of biodiversity with only 5% remaining of this kind of forest in Ecuador. Mestizo and Afro-Ecuadorian colonists and the indigenous group of Chachi live in and around the Mache-Chindul Ecological reserve. This paper explores how these different groups utilize and collect the palm, pambil, *Iriartea deltoidea*, (Arecaceae) within the context of sustainable development and the discourse surrounding Non-Timber Forest Products (NTFPs). Fifteen families were interviewed using semi-structured interviews to collect data. Additionally, the researcher used participant observation to further understand the topic. Living with the families' further aided the collection of data through unstructured interviews. People of all three ethnic groups in the Mache-Chindul area utilize the palm pambil, *Iriartea deltoidea*, (Arecaceae) mostly for subsistence uses, although some items are marketed. The palm, considered to be a Non-Timber Forest Product (NTFP) can be collected sustainably, although different groups collect in distinct ways, some more ecologically than others. The palm scarcity, abundance, extraction, use, cultural and market valuation influence both harvesting and conservation practices. The palm is currently a popular forest material for people to collect from primary and secondary forest for numerous uses. Most respondents indicated that there is not a scarcity of the palm, although with the continued harvesting practices, especially of certain groups, the collection will soon become unsustainable, thus people are looking into conserving the forests in which the palms grow.

Keywords: Palms, Ecuador, NTFP

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Deadly Energy and Racial Violence in Latin America

Development banks predict Latin American electricity consumption will double by 2030 following \$400 billion dollars of investment in the sector. This growth is concerning because extreme energy injustice flourishes in the region's fossil fuel and renewable energy systems with hired thugs, paramilitary, military, and police murdering to facilitate energy expansion. This paper provides comparative analysis of oil, natural gas, hydropower, and biofuel case studies to (1) identify patterns in the causes of violence, (2) advance understanding of where and why fatalities are clustered, and (3) recommend solutions. Homicide often follows social unrest and is utilized as a cruel tool to eliminate or intimidate land defenders, environmental protestors, and marginalized populations, particularly Afro-descendant and Indigenous Peoples. In spite of widespread impunity, local-to-global

networks of watchdog organizations and human rights groups seek accountability. Violent Latin American energy projects often have linkages to donors, development banks, and corporations located in North America and Europe.

Keywords: Energy geographies, Environmental activism, Land rights

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Nuevos Métodos de Planeación Prospectiva Participativa Estratégica para la Equidad Sustentable

Se presenta el método “Consulta Amplia de Expertos con Método Triaxial de Escenarios Futuros Posibles”, una combinación de dos métodos con modificaciones innovadoras en cada uno de ellos y su prueba como herramienta de planeación participativa a nivel nacional, de “Expertos” para la planificación y toma de decisiones más equitativa y sustentable; permite incorporar la diversidad, la complejidad y la incertidumbre mundial del Siglo XXI resultantes de la globalización y los cambios tecnológico y climático y su interpretación y estrategia de adaptación desde las regiones colombianas y sirvió para el diseño del IDTS, Índice de Desarrollo Territorial Sustentable de Colombia.

Keywords: Planificación, Estratégica, Escenarios

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A Tale of Two Telas: Mega-Projects and the Fight for Space and Place in New Orleans and Honduras

The restaurant, Telamar, owned by sisters, Claudia and Deissy, is emblematic of the New Orleans post-Katrina recovery as it provides space for Latino workers vital to rebuilding the devastated city. Many of these laborers continue reconstruction efforts, which include temporary work on a \$2 billion dollar hospital mega-project—just blocks from Telamar—which is spurring gentrification by pricing out families and displacing businesses. Two thousand miles south of New Orleans, Claudia and Deissy's father, Don Chilo, owns a bar in a fishing village near Tela, Honduras. Just across the lagoon from Don Chilo's bar in El Marion, an expanding mega-tourism project threatens the area through the destruction of the wetlands. Similarly, surrounding El Marion, an under-regulated African palm oil industry continues to swallow up land and destroy communities, posing a direct threat on Don Chilo's bar and community. Grounded in ethnographic methods and spatial analyses of these two areas, I argue that neoliberal policies, particularly private-public partnerships

that enable unbridled corporate growth, contribute to the vulnerability of these businesses and their respective communities. At Telamar, the same global forces that draw in their Latino clientele—rebuilding efforts and mega-projects—are the same forces pricing out many of these Latino communities. In Don Chilo's bar, this unfettered corporate growth contributes to the destruction of local economies and the environment, and leads to the migration of people. In each case, development projects engender the disruption and displacement of the working class people and places that make these communities culturally rich.

Keywords: Migration, Transnationalism, Neoliberalism

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Territorializing the Chicontepec, Mexico's largest hydrocarbon reserve

Newly accessible shale and unconventional sources of natural gas and oil have transformed the global energy sector and are regarded as major future energy sources. Production potential from unconvensionals stimulated passage of Mexico's 2014 Energy Reforms, which aimed to reverse a decade-long decline in oil and gas production by opening the state monopolized hydrocarbon sector to corporate competition, foreign capital investments, and new public-private partnerships. Private companies can bid on new concession blocks, including 81 in the Chicontepec Basin, which covers ~3,800 km² in Veracruz and Puebla and is estimated to hold 39% of Mexico's known hydrocarbon reserves. But the basin's geologic and technical complexities require aggressive and yet-to-be-developed fracturing techniques. To many, these can only be realized by private firms with the necessary knowledge, experience, and risk-taking abilities. This paper examines these and other developments with a particular focus on the interrelationships among territorializing projects, the contemporary governance structure, and resource materiality in the Chicontepec basin. It also provides some background on Mexico's 2014 Energy Reforms and the current state of hydrocarbon activities.

Keywords: Energy, Hydrocarbons, Neoliberal Reforms

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Understanding Land Change and Commodity Production at the Meso-Scale Level. The Case of Forest Transitions in Mexico

Curbing emissions from agriculture and forestry sectors is critical if developing nations are expected to comply with international commitments such as the Paris agreement. Hereof, an understanding of how agricultural development affects land use and land cover change

is crucial. A large body of literature address this problem. However, most research has concentrated on the analysis of land allocation decisions by agriculturalist households "" either to understand deforestation in forest frontier regions or forest transitions in settled areas previously subjected to agricultural encroachment. Spatially explicit studies addressing national land change, considering deforestation and forest transitions in a unified framework, are still largely absent in the literature. We analyze the impacts of the 1990s structural reforms in Mexico in maize and beef commodity chains and its effects on complex land use and land cover change patterns. Our results reveal important linkages between structural changes in commodity production, spatial structures, and land change, and highlight the importance of national-level analysis to address policies such as RED.

Keywords: Land Change, Mexico, Commodity Chains

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Corporate Social Responsibility in the Mexican oil industry: Social Impact Assessment as a Tool for Local Development

In 2012, a new type of contracts were created in Mexico that allowed foreign companies to participate in the phases of exploration, well development and production for the first time in over sixty year although they had to sell their production to the state owned company Petroleos Mexicanos (Pemex) who oversaw the contracts. In addition, to meet the requirements of the "Integral Contracts for Exploration and Production" [2], the new operators had to set up Corporate Social Responsibility plans founded in Social Baseline Studies. The so-called Mexican energy reform allowed a completely independent participation of private companies. The supervision of the contracts went to the Ministry of Energy and the National Hydrocarbons Commission (Comisión Nacional de Hidrocarburos, CNH), the social baseline studies became social impact assessments that fulfilled the international standards in the matter and the Corporate Social Responsibility plans turn out to be Social Management Systems. In this context, it is possible to sustain that the participation of private oil companies with corporate social responsibility schemes can contribute to the local development but the application of social responsibility actions does not imply by itself an impact on local development.

Keywords: Oil Industry, Mexico, Social impact assessment

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Reconstrucción histórico-espacial de la Propiedad Social y las Áreas Naturales Protegidas en Michoacán, México (1917-2011)

La relación entre la condición de las áreas forestales, las estrategias para su conservación y el tipo de propiedad en que se encuentran ha sido ampliamente debatida, sin embargo, en estos debates se han dejado de lado aspectos históricos y la evolución de la distribución de la tierra. Este trabajo analiza la relación histórica de la constitución de la propiedad social y la creación de áreas Naturales Protegidas (ANP) en Michoacán, México. Mediante las fechas de dotación, analizamos el reparto de toda la propiedad social del estado para identificar y comparar su momento de creación con las fechas de creación de las ANP. Igualmente analizamos los cambios en las cubiertas forestales por tipo de propiedad. La mayor parte de las ANP se superponen con propiedades sociales, tenencia que se constituyó, en promedio, 50 años antes. Las dinámicas que se crean a partir de la superposición de políticas de gestión del territorio, como es el caso de las propiedades sociales y las ANP, dificultan la identificación de cambios en las cubiertas forestales relacionados con un tipo de manejo u otro. En un contexto como el de los bosques de México, la historia del manejo que se le ha dado a un área es un factor importante para que se alcancen los objetivos con los que son creadas las áreas naturales protegidas.

Keywords: Propiedad Social, áreas Naturales Protegidas, Reconstrucción Histórico-Espacial

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Identity within Informality: Urban Negotiations in Bolivia and Brazil

In Santa Cruz de la Sierra, Bolivia, a 33-year old informal community characterized by marginalization, internal migration, and ethnic difference is becoming more integrated into the larger city socio-economic sphere, but maintains a distinct identity. In Rio de Janeiro, Brazil, an older such community remains marginalized and separated from the social reality of the city. Although both communities identify as part of the cities they call home, what accounts for their different experiences and identities associated with marginalization? This paper explores the relationship between identity, urbanization, and informality in Bolivia and Brazil. Through interviews conducted in informal communities in Santa Cruz de la Sierra and Rio de Janeiro, it seeks to explain the development of multiple urban community identities, divided along lines of formality, and the effects of this multiplicity on lived urban experience. In both cases community identity seems to be informed by the ways in which communities were founded and developed and the

collective memory of this process. These memories and sentiments manifest in ideas of community, and in relationships between community members and other urbanites. In addition, perceptions of poverty, informality, and race contribute to social othering and the strengthening of community solidarity. Yet, identity differences become less apparent as both formal and informal economies move past community boundaries. Amid an expansion of informal settlements, a better understanding of the relationship between identity and urban experience in marginalized communities is key for those undertaking community development.

Keywords: Community identity, Informality, Urban experience

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The planning process as source of social opposition to wind-power development: Cartographic erasure in coastal Cear , Brazil

Social and political opposition to wind power in North America and Europe originates from an exclusionary planning process and complex aspects of human attachment to cultural and physical landscapes. In developing countries, knowledge is far less developed regarding reasons for opposition to wind power, but opposition is thought to originate from the physical and economic marginalization of affected people, whose lands may be appropriated for wind farms, from the positive benefits of renewable power. Processes of land and resource appropriation of land and resources for renewable energy are not well known. We analyze the planning and licensing process of a wind farm as a cause of physical and economic marginalization of people from resources and land used to site wind turbines using a case study of Cear  state, Brazil, a leader for wind-power development. The case study reveals how wind-farm construction relied on cartographic and physical erasure of claims to land. Erasure created the illusion of unoccupied land made official in the planning and licensing process. Social opposition, rooted in contrary claims to land and resources, confronted wind-power developers in the case we analyze and in several other instances in Cear  state. We identify similarities with "green grabbing" processes and propose lessons for future wind-power development in Brazil.

Keywords: Wind power, Conflict, Erasure

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Brazil's agricultural suitability for sugarcane production under climate change scenarios

The rise in demand for biofuel has stimulated the production of sugarcane ethanol. The sugarcane ethanol is the commercial biofuel with the lowest life-cycle emission of greenhouse gases, in an international market that is expanding. Brazil, the main producer and consumer, has a commitment produce enough ethanol to meet all demand further promoting the sugarcane expansion. Indeed, the Brazilian production is expanding to the already threatened Cerrado biome (Brazilian savanna) raising concerns over the sustainability of sugarcane and ethanol production. To overcome this problem, the Brazilian government created the Sugarcane Agroecological Zoning (SAZ). The SAZ defines areas that are suitable or non-suitable for sugarcane expansion given criteria related to climate, soil, and land use. Under the zoning criteria, areas that have already been converted to agricultural uses in the Cerrado comprise the majority of areas for sugarcane expansion. However, the SAZ do not incorporate climate change scenarios. The present paper seeks to estimate possible impact of climate change on the spatial distribution of suitable areas for sugarcane production in the Brazilian Cerrado. To accomplish this task, bioclimatic, soil, and DEM datasets were used to model the current suitability of sugarcane using ecological niche modeling techniques. Later, this suitability model is used to project the future distribution of suitable areas under climate change (2050 and 2070). Preliminary results have identified that most of Cerrado suitable areas are not resilient to climate change. This finding can be used to evaluate suitability areas during the development of different land use policies.

Keywords: Climate change, Biofuel, Suitability

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Andean Forest Governance in Apurímac, Peru

State and non-state institutions, individuals, and communities influence the conservation of tropical Andean forests. These forests harbor biodiversity, and provide tangible and intangible ecosystem services. The management, use, and governance of these forests at community and local levels is poorly documented. While some Andean forests are protected within national systems of protected areas, communities and individuals manage and use forest resources. State actors at national, regional, and local levels play distinct roles in forest governance. International cooperation and non-governmental organizations also play a role in forest governance, influencing communities and state institutions. This paper identifies key actors and institutions involved in the management of Andean forests

within the Mancomunidad Saywite—Choquequirao—Ampay located in the region of Apurímac, Peru. During the 2015 and 2016 summer field seasons, I conducted semi-structured interviews with actors influencing forest conservation, and facilitated six workshops with local communities. Furthermore, I attended community and institutional meetings as an observer. Communities have internal agreements to protect natural resources including forests, but may lack mechanisms of effective monitoring and control. State actors influencing Andean forest conservation manage different natural resources and lack a vision of integrated landscape management. The national and regional governments have pursued a strategy favoring reforestation with exotic species and their management for timber sales. This implies little budget or personnel allocated towards the monitoring and protection of native forests. The regional and provincial environmental commissions serve to articulate actors, but have low participation rates by communities.

Keywords: Andes, Tropical Andean forests, Forest governance

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Reforestación y agroecología en la territorialización campesina

Las acciones de cuidado al medio ambiente, como la reforestación, son consideradas, casi de forma automática, como benéficas en términos ambientales, y por tanto sociales. Sin embargo, poco se ha explorado el papel que juegan como herramienta en la apropiación del territorio por parte de los campesinos. O, en contraste, como acción autoritaria de alguna institución externa. En el presente trabajo exploro la hipótesis de que, al menos en México, cuando las acciones de reforestación surgen desde el interior del territorio, generalmente están vinculadas con acciones agroecológicas. Lo anterior es consecuencia de la búsqueda de soluciones integrales a la aparente contradicción entre la necesidad (y deseo) de vivir en un medio ambiente sano con la producción de alimentos, además de un arraigo a la tierra. La unificación de acciones de reforestación con agroecología se convierte entonces en una herramienta de territorialización campesina al ser ellos ejecutores, gestores y protectores de estos proyectos. Contrastando con las iniciativas externas en cuyo discurso se asume muchas veces la ignorancia o despreocupación campesina en temas ambientales. Como primer acercamiento a esta hipótesis, se realizaron más de 30 encuestas a productores agroecológicos independientes en todo el territorio mexicano, se revisaron las características de los principales planes de reforestaciones nacionales y regionales (gubernamentales y privados), y se analizaron los discursos de los casos (internos y externos) más sobresalientes. Los resultados confirman que aquellas prácticas que satisfacen las necesidades de un medio ambiente sano con prácticas sustentables de producción de alimentos son de origen campesino.

Keywords: Territorialización, Reforestación, Agroecología

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Mapeando a Cooperação SUL-SUL Brasileira-Uma Proposta de Classificação

Este artigo consiste numa proposta de classificação das atividades de cooperação Sul-Sul brasileiras. Por cooperação Sul-Sul brasileira entendem-se as atividades diplomáticas empreendidas por este Estado tendo como alvo os países em desenvolvimento. Estas incluem, no levantamento realizado pelos autores, desde a fundação de consulados (postos oficiais) e embaixadas, envio de adidos diplomáticos e visitas presidenciais até a oferta de projetos de cooperação técnica. Acredita-se que, isoladamente, tais atividades não traduzam a orientação da política externa para os países em desenvolvimento. Lendo-as em conjunto, entretanto, tem-se uma visão mais ampla das relações entre Brasil e países em desenvolvimento. Um das formas de facilitar essa leitura em conjunto é processando os dados levantados através de técnicas de análise multivariada, dentre elas a análise de agrupamentos, técnica que permite o agrupamento de objetos a partir da similaridade entre eles. Neste caso, os subconjuntos formados são compostos por países que apresentam características semelhantes em relação as atividades diplomáticas brasileiras, sendo classificados de acordo com sua relação com o Brasil. O resultado deste processo é revelador do ponto de vista geográfico, já que permite identificar um padrão espacial na distribuição destes grupos.

Keywords: Brasil, Cooperação Internacional, Análise Espacial

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Digital Historical Geography for the Public

Advances in the digital humanities offer new innovations in mapping, animations, and virtual realities that can bring historical geography to the public. This paper highlights an interactive exhibit at the Colorado Springs Pioneers Museum to tell the historical geography of the city. Users interface with web-delivered, time-enabled animated maps on interactive tables, link to historical photos alongside contemporary street views on those maps, see geovisualizations and virtual realities that portray historical and geographical change, and access multiple types of digital media. They then have the opportunity to use smart phones or other mobile devices to walk on field tours throughout the city, where place-based interpretive content streams to their devices as they move from point to point. Finally the public can suggest edits or new contributions through a crowd sourcing interface so the project will grow in perpetuity with new content. The project brings past landscapes alive for the public and makes the connections that tell the story of the shaping of the city. Engaging the public with digital geo-humanities fosters a sense of place and shared connection with their community.

Keywords: Historical geography, Digital humanities, Urban

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Securing Caribbean energy: Petrocaribe and the Caribbean Energy Security Initiative

Eastern Caribbean islands are currently almost completely dependent upon oil to meet their energy demands. This reliance on costly imported oil leads to extremely high electricity prices, severe trade imbalances, and depletes scarce foreign exchange. In recent years, however, Caribbean islands have come into focus for international NGOs, banks, donors, and renewable energy equipment manufacturers eager to facilitate and profit from a transition to renewable energy. While recent international agreements that have designated funds for climate change mitigation in the Global South have undoubtedly spurred some energy transition activity in the Caribbean, in this paper I argue that the increased attention of the United States has been largely geopolitical. Drawing on interviews with key informants and analysis of hundreds of archival documents, I trace the rise of Venezuelan influence in the region after the signing of the 2005 Petrocaribe agreement that made Venezuela the preferred provider of oil to the region. I then examine the increasing role of the United States in the region's energy affairs via various US-sponsored trade and development organizations. I conclude by speculating on the changing geopolitics of energy supply and energy security in the Caribbean region.

Keywords: Energy, Caribbean, Geopolitics

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The UNESCOfication of Cuenca, Ecuador: Heritage, Culture and Transnational Gentrification in an Andean heritage city

This paper explores the transnational gentrification of the UNESCO world heritage site of Cuenca, Ecuador. The paper uses a post-colonial frame to question whose heritage has been designated as worthy of protection, and which economic and ethnic interests are being promoted through the patrimonialization or UNESCOfication of Cuenca's El Centro neighbourhood. The process of heritage recognition has been used to prioritize urban revitalization projects that focus overwhelmingly on built architecture of the colonial city, and which prioritizes real estate valuation aimed at the tourist sector. This built heritage represent the social projects of the land owning and manufacturing elites of Cuenca. This built environment, however, is not the city of peasant workers, many of them indigenous or mestizo-indigenous from the countryside around Cuenca. These latter were employed as unpaid peasant workers on hacienda estates, particularly on the large sugar cane latifundia of the Paute and Yungilla valleys up until the late 1960s. Patrimonialization currently

displaces working class and poor Ecuadorians, while benefiting those who have inherited social positions that exploited landless peasants within the hacienda system. Moreover, emphasis on building tourism capacity and increasing property values has also participated in a phenotypical whitening of a transnationalized social space, where the tastes and interests of tourists and lifestyle migrants—most of whom are racialized white—are advanced at the cost of local people.

Keywords: Gentrification, Lifestyle and Amenity Migration, UNESCO

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The Indigenous Concejos Territoriales of the Honduran Muskitia

Research results detail the remarkable establishment of the first "intercommunity titles" for the indigenous peoples of the Honduran Muskitia, covering 15,000 kms (~90%) of the Department of Gracias a Dios. A trend among Central American states has been the granting of land titles to indigenous communities. We mapped 1200 "indigenous territorial jurisdictions" that cover an estimated 16 percent of the region. Sometimes these are emblematic of neoliberal multiculturalism and the "territorial turn," other times not so much. Through archival research and participatory research mapping (PRM) we reveal the multitude of forces at the national and international levels, as well as the agency of indigenous peoples themselves, to bring these changes.

Keywords: Indigenous Miskitu peoples, Land titling, Central America

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Modeling Mexico's Núcleo Agrario Property Regimes following the 1992 Agrarian Reforms and 2014 Energy Reforms

The creation of Mexico's núcleos agrarios were a state-led response to widespread landlessness that provided much of the impetus for the Mexican Revolution. Citing Article 27 of the 1917 Mexican Constitution, the government expropriated and distributed approximately 103 million hectares of land to 31,873 social properties called núcleos agrarios from 1917 to 1992. In 1992, amendments to Article 27 of the Mexican Constitution altered the de jure conceptualization of the núcleo agrario as social property was radically altered. The reforms were a vehicle to survey, title, and privatize all or parts of their lands through the federal PROCEDE and FANAR programs, which have certified about 97% of all núcleos to varying degrees, resulting in a spectrum of property regimes. Additionally, the 2014 Energy reforms, which favor subsurface mineral rights over surface rights, also have changed property regime in núcleos agrarios where hydrocarbons are explored,

transported, and extracted. This paper highlights a unique geospatial methodology that allows for the classification of post-reform núcleos agrarios, their stakeholders, and landscapes in a case study of the Chicontepec Basin in the Mexican States of Hidalgo, Puebla, and Veracruz. The mosaic of varying property regimes are categorized into three tiers of three social property classes: "social" only perimeter surveyed and maintain communal property structure, "hybrid" with titled parcels, but retain common use areas, and "privatizing" with portions or all common use areas parcelized and near dominio pleno divided among the type of hydrocarbon activity planned or underway.

Keywords: Núcleo agrario, Agrarian reforms, Energy reforms

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Pudrición del Cogollo and the (Post-)Neoliberal Ecological Fix in Ecuador's Palm Oil Industry

This paper examines the variegated natures of (post-)neoliberal environmental governance in Latin America using environmental crisis as an entry point. It examines the institutional measures put forth by Ecuador's government, in concert with other actors, to contain and manage the damaging effects of an insidious palm oil plant disease known as, Pudrición del Cogollo (PC). Using empirical data collected through qualitative means, my analysis demonstrates that that nature's biophysical processes—in particular, disease ecologies—can play a crucial role in the pursuit and achievement of national accumulation goals. Specifically, I argue that the ecologies of the PC crisis have been rendered functional to the Ecuadorian government's current political and economic strategies of intensified accumulation and market competitiveness. By making environmental crisis the basis of key accumulation strategies, the state is able to convert negative environmental outcomes into opportunities for profit-generation. Utilizing the notion of the "ecological fix", this paper reveals two major conclusions: (1) plant health emergencies and the actions used to mitigate environmental crises are not only challenges but moments of opportunities that can be mobilized to further accumulation strategies and (2) the study of PC and Ecuador's palm oil industry provides new fruitful terrain to examine the connections between the deepening variegated effects of neoliberalism through nature and environmental crisis solutions in Latin America.

Keywords: Palm oil, Ecuador, Ecological fix

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Migration and health: how crossing borders affects the health of “los que se quedan” and los migrantes (including gringos)

International migration has been shown to have significant effects on the health of migrants and loved ones left behind. Health is affected by every phase of migration: pre-departure, the trip, the destination, and return. This paper will examine what is known about the effects of international migration on the health of Ecuadoran migrants and their family members. Migration has countervailing tendencies; it increases the material conditions of most migrant households, but the trauma it causes leaves many family members with new or worsened health problems. Less is known about return migration, but it is clear that communicable diseases go to the Global South from the Global North. The long-term consequences for migrants and their families have yet to be examined. The paper will conclude with a discussion of the health impacts of Ecuador's "new immigrants," retired North Americans.

Keywords: Migration, Health, Ecuador

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Above and Below: Performing Conservation Borders in the Andes

A "water fund" is a market-based model for watershed conservation that cities throughout Latin America are quickly adopting. Urban market actors and international NGOs pay into a fund that is then applied to conservation activities in rural communities existing in and around ecosystems important for the quality and quantity of water flowing downstream to the city. Ecosystems are inextricably tied to the landscape, so water funds seek to influence land use practices. However, the process of establishing control over the land use activities within a targeted area is a challenge, particularly when these areas exist outside of the boundaries of state delineated protected areas and encompass landscapes where people are living and working. Drawing upon an empirical case study of a model water fund from Ecuador called FONAG, this paper employs data from participant observation, key informant interviews and archival documents to examine labor of the Páramo Guards, the local residents directly paid as employees of FONAG for their work as intermediaries between the water fund and rural Andean communities. Their labor goes towards 1) conserving the páramo ecosystem and 2) recruiting the collective labor of their neighbors to do conservation work. The páramo guard's labor directly contributes to enforcing FONAG's territorial claim on the land, necessary to pursue the commodification of ecosystem services that are derived from it. While highlighting the tensions and contradictions that emerge from the guard position, this paper demonstrates how

territorial claiming through market based environmental governance is a strategic, performative and incomplete process.

Keywords: Watershed services, Andes, Conservation

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Follow-up study of improved cookstoves in the Cuzco region of Peru

Approximately three billion people use traditional biomass stoves, especially in less developed countries. The health problems associated with indoor air pollution, notably as they affect women and children, and how the reliance on biomass fuels contributes to deforestation and climate change have been well publicized. Improved cookstoves, which vent smoke from houses and burn wood more efficiently, have been offered as a solution to these problems. However, there are on-going concerns about the effectiveness and low rates of adoption of these devices. Cal Poly State University, San Luis Obispo, has a study abroad program in Cuzco, Peru, and working with the NGO Proworld Service Corps, students have been installing improved stoves in rural indigenous communities in the region. This paper is a follow-up study of the stove project. A survey was administered in 43 households in three communities where Cal Poly students installed stoves from 2011 to 2014. The results indicate an adoption rate of 70 percent and identify the characteristics of the stoves that contribute their adoption and sustained use.

Keywords: Improved Cookstoves, Peru, NGOs

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Local Protected Areas and Payments for Environmental Services in Calakmul, Mexico

The Calakmul Biosphere Reserve in the southern Yucatan Peninsula region of Mexico was conceived to protect an extensive tropical moist forest. Since the 1980s, over fifty village settlements (ejidos) have been established within the forest margins; in them, subsistence and commercial farmers and foresters have struggled to establish new cultures and economies. NGO and government conservation and development efforts have often worked at cross-purposes. The Reserve's existence has had little impact on the day-to-day activities and land use decisions of most settlers. In 2016, the author interviewed leaders of 15 villages, to learn about their own concepts of parks and protected areas. Contrary to expectations, only a few villages set aside land for conservation as a part of local, "organic" process. Instead, a new program of Payments for Environmental Services (PES) implemented by the Mexican federal government is having a direct impact on local conservation, in a way the Biosphere Reserve never achieved. However, most PES-

registered set-aside lands were already considered by villagers to be unsuitable for cultivation.

Keywords: Payment for environmental services, Mexico, Ejido

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Ecuador's Changing Quichua Geography

Ethnolinguistic identity is a key factor in cultural and political ecology, as well as in the struggles for human rights. The 2010 census of Ecuador, with all its faults, provides information on the geography of the Quichua language, which is especially poignant in comparison with the patterns found in the earlier 1950 census.

Keywords: Ethnogeography, Ecuador, Karl Butzer

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Distribution of Medicinal Snow and Disease Ecology in Colonial Veracruz, Mexico

Managing the disease ecology of its primary port of entry, the coastal city of Veracruz, has been one of Mexico's most persistent socio-environmental challenges. Veracruz was known as the tumba de españoles, a dangerous place that served as the birthplace of epidemics and the entry point for diseases from Europe. Even today, the Zika, Chikungunya, and Dengue viruses thrive in Veracruz, transmitted through mosquito vectors to unlucky residents. But long before clear understanding of mosquito-borne diseases was established in the late nineteenth century, it was the specter of yellow fever (vomito negro or prieto) that terrorized the hearts and minds of residents and travelers alike. This paper provides the first study of what documents reveal was a popular remedy for yellow fever in colonial Veracruz—snow. Through transcription and analysis of unpublished colonial documents, this paper examines the environmental history of medicinal snow here, including its vast supply chain, which stretched from its alpine source, high above the tree line on Mexico's tallest mountain, to the tropical, coastal lowlands of Veracruz. Using an environmental justice framework, this paper demonstrates that colonial officials governed the medicinal snow trade not so much as a profitable commodity, like so many other colonial industries, but rather as a public good, to be used for the public good and to mitigate the hazards of living in the disease-ridden port city. In doing so, the paper illustrates a more conflicted and compassionate side of environmental governance in colonial Mexico—one focused more on environmental justice for the poor and the sick, and less on simple profit maximization for the Crown.

Keywords: Mexico, Environment, Health-medical

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When did Key West become American? Rails, reefs, and the re-imagining North Havana

The Florida Keys, a chain of small limestone islands stretching southwest from mainland Florida, have for most of their post-1492 history been a minor stopover between ports in the wider Caribbean. With little settlement area and few natural resources, the Keys served for centuries as a liminal haven for refugees, maroons, and buccaneers from different empires and nations, with Spain dominating settlement and economic activity in the archipelago's westernmost island. The 19th-century transfer of Florida to United States control, however, began a process of "Americanization" that precipitated a fundamental reorientation of the regional imaginary. This paper examines the role of the Florida Overseas Railway project (constructed in 1905-1912 from Miami to Key West) in the re-imagining of Key West. Relying on media reports as primary sources, the paper examines geopolitical claims and expectations that the new rail line would shift regional trade routes, connections, and alliances, making Key West more securely American in the process. Just like the Panama Canal, which was under construction at the same time, the Key West extension was perceived as having the power to shift relationships throughout the Caribbean and Gulf regions, using American capital and engineering to effect geopolitical advantage and agricultural settlement in a transformative process. By using an STS approach to understand the historical geography of railroad construction and its impacts, the paper explains how Key West's modern "American" identity came into existence and also shows the ways in which it obscures non-American identities in the Island City.

Keywords: Caribbean, Environmental history, Science and technology studies

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Challenges to water security along the "Emerald Coast": A political ecology of local water governance in Nicaragua

Despite being a water-rich country, Nicaragua struggles to secure clean water access for many of its residents. Moreover, a prolonged drought affecting all regions of the country has compounded preexisting governance challenges to ensuring water access in both urban and rural areas (Romano 2016; LaVanchy & Taylor 2015). This paper focuses on a particularly water insecure region along the southwest Pacific "Emerald Coast" of Tola to examine the following question: In a context of diminishing groundwater levels and

increasing tourism development, how do local actors respond in attempts to meet their water needs? Drawing upon groundwater and meteorological field measurements and semi-structured interviews gathered over five years in Nicaragua, this paper finds that attempts to secure water have taken on a largely ad hoc, reactionary character that has yielded non-uniform and uncertain outcomes. We argue that the production of this kind of water [in]security in Tola is best explained by examination of the social and political context (and related variables) mediating the hydrological effects of prolonged drought and tourism development. In particular, we found that several compounding and intersecting factors exacerbate water insecurity for local populations in Tola within a broader national context of non-implementation of laws and state dependence on community-based water management regimes. These factors include 1) the lack of a consistent presence of rural development organizations focusing on water and sanitation; 2) limited connection/relationship between local population and the local government; 3) and the transient, local and foreign, character of local communities that strain efforts to organize effectively. To highlight the significance of these factors in the Tola context, comparisons are drawn with non-tourist, yet also increasingly water-insecure, regions in northern Nicaragua with more stable and homogenous populations and different histories of meeting water access needs (see Romano 2012). The findings of this research are relevant to other water insecure areas in Nicaragua and Latin America where industry development and tenuous state-society relations impact the "local" resolution of water security issues" including those compounded by increased climatic variability.

Keywords: Water security, Water governance, Nicaragua

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NAFTA and the environment: a retrospective

This paper discusses the results of a project which seeks to assess the environmental impacts of the North American Free Trade Agreement (NAFTA), mostly along the US-Mexico border, more than two decades later. We combine environmental and social data, case studies from the literature, and interviews with scholars and activists to understand what has happened to air and water quality, land use and biodiversity, waste and food supply, and environmental institutions and activism over the last 25 years. We discuss the challenges of attributing changes to NAFTA and the other factors that have been significant.

Keywords: Environment, NAFTA, Mexico

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Maya Wetland Systems from Earth and Sky and Holocene to Anthropocene

Maya wetland research has a deep history in multiple fields and provides an expositive lesson of how science evolves. This presentation first explores the history of wetland research in Mesoamerica from discovery to modern restoration, and their possible role in the Early Anthropocene. We then consider the multiple lines of evidence to understand the timing and formation processes of ancient Maya wetland systems based on 15 years of field study in Belize. Evidence derives from many excavations, AMS dates, pollen, soil and water chemical analyses, and remote sensing. We then consider the natural and human altered formation of wetland fields, what grew in the fields, and when they were active. We synthesize formation models and present new findings from three wetlands at Lamanai, The Birds of Paradise, and Ojo de Agua on three separate and chemically diverse river systems in Belize. Based on remote sensing, including 300 square kilometers of LiDAR acquired in 2016, we consider the extent and importance of Maya wetland agriculture in the Maya Lowlands. We then discuss how to study some of the thorny, unanswered questions in this research. Finally, this paper considers how Maya wetland systems provide a model for world heritage of human interaction with changing environments in the Anthropocene.

Keywords: Maya Wetland Agroecosystems, Geoarchaeology, LiDAR

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Improving Localized Sustainability through an Emerging Agroforestry Project in the Peruvian Amazon

In the Peruvian Amazon, large-scale deforestation has resulted from unmanaged extractive logging, pasture development, and coca cultivation, and is increasingly impacting both the region's environment and its population. A growing body of literature indicates that these zones of extraction should be targeted as reforestation sites, in particular through the introduction of agroforestry practices, as this type of agricultural development can potentially help to reduce pressures on the remaining forest, while simultaneously recuperating degraded areas. One such alternative sustainable agroforestry project emerging within the Kosñipata Valley is the introduction of cacao (*Theobroma cacao*) by the Asociación para la Conservación de la Cuenca Amazónica (ACCA) at the biological field station, Villa Carmen, a former sugar plantation and cattle ranching operation. Concurrent with ongoing agricultural experimentation at the station, through the introduction of this sustainable agroforestry project, ACCA intends to improve local soil fertility, enhance local biodiversity, and develop a productive economic alternative for local residents currently

dependent on extractive practices. This paper explores the potential of this agroforestry project to both improve localized agricultural sustainability within the greater Kosñipata Valley, as well as the possibility of the project to ultimately help reduce deforestation and forest degradation further within the region.

Keywords: Agroforestry, Peru, Amazon

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Migrant-Led Development in a Non-Traditional Context: Adaptation of Mexico's 3x1 Program in Yucatan

Mexico's 3x1 Program has been lauded as an innovative model to catalyze development in migrant-sending communities by supporting the small-scale philanthropy of migrant hometown associations. In Mexico's historic migration region, the program has enabled thousands of projects like paving streets, expanding sewer and water systems, or providing grants to students and schools. Certain aspects of the model are particularly emphasized, including the grassroots origin story, assumed independence of migrant organizations based in the U.S., collective and community-focused nature of the model, and transnational links that permit exchanges of ideas along with dollars. However, after the model was institutionalized as the 3x1 Program and expanded to many new contexts, examples have emerged that diverge from the standard interpretation based on the experiences of pioneering groups. This paper examines one such case, Yucatan state, which has very low migration intensity yet participates actively in the 3x1 Program. I will overview the history and patterns of migration and participation in the state and explore how the model is adapted and mutated in ways that reflect the specific contexts. The earliest projects in Yucatan generally fit the discourse of migrant-led development that is grassroots, collective, and transnational, but more recent projects have diverged from these expectations, sometimes in ways unique to the state and other times through divergences that are common to many contexts. Reflecting on this example, I will consider its implications for the idea of the 3x1 Program specifically and diaspora development more broadly as models with assumed external relevance or transferability.

Keywords: Diaspora development, Transnationalism, Hometown associations

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Minería, planeación del desarrollo y oposición: la disputa por la Sierra Norte de Puebla, México

En las últimas dos décadas la reactivación del sector minero en México ha estado caracterizada por un alto potencial en la generación de escenarios contenciosos. Si bien, la mayoría de los conflictos están asociados a un proyecto y una localidad específica, la Sierra Norte de Puebla nos muestra un caso regional. Donde se articulan proyectos mineros, energéticos y de vivienda; así como actores igualmente heterogéneos. Mediante trabajo etnográfico y documental, nos hemos acercado al conflicto haciendo énfasis en la polisemia espacial. Con lo cual se caracterizaron coaliciones y elementos discursivos que definen cada bloque (Hajer, 2006). Como resultado se ha identificado una coalición estado-corporaciones, donde el espacio es entendido en una dimensión abstracta y, en consecuencia, maleable. Reflejada en caracterizaciones espaciales a partir de estudios técnicos de viabilidad (minera o energética); y en una lógica de desarrollo regional que parte de una reorganización física y política del espacio. En contraposición, otro grupo de actores, principalmente locales, logra articularse regionalmente frente a lo que definen como Proyectos de Muerte. En este proceso, algunas narrativas locales convergen, mientras otras son excluidas (en un proceso igualmente hegemónico). Sin embargo, la idea de un espacio y amenaza común; así como de una meta-comunidad, se construye mediante la idea misma de la región. Representando el espacio como elemento ontológico de los opositores; y sirviendo como contrapeso político. De esta forma, podemos observar un escenario general de confrontación, cuyas consecuencias físicas y sociales estarán ineludiblemente enraizadas en el proceso mismo del conflicto.

Keywords: Conflictos territoriales, Región, Minería

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Levantine Diasporas/Latin American Destinations: A Neglected Geography

This paper examines the geography of peoples collectively referred to as "los turcos" who immigrated to Latin America from the Eastern Mediterranean and North Africa. Although in the popular geographical imaginary they are conceptualized as a single ethnicity with general origins in Ottoman provinces of the Eastern Mediterranean and North Africa, the historical and geographical reality is a good deal more complex. The ethnic and cultural—particularly linguistic and religious—diversity of this cultural formation forged in a southern and eastern Mediterranean diaspora represents an array of geographically discrete trajectories and manifestations in Latin America geographies. This paper sketches

the outlines of these movements and the various groups' subsequent emplacements in, and impacts on, Latin American cultural, political, and economic arenas.

Keywords: Los Turcos, Levantine, Diaspora

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Livelihood transitions in the Colombian Pacific: evaluating the social and environmental impacts of tourism development in small-scale fishing communities

Tourism is often promoted as a form of sustainable development in rural coastal fishing communities. Ideally tourism provides alternative livelihoods while reducing the pressure on natural resources, however the pathways and outcomes of these transitions vary widely, affecting their ultimate sustainability. This research examines how tourism development has altered the human-environment dynamics in eight rural communities on the Pacific coast of Colombia through a three-stage exploratory mixed methods approach. These communities share socio-cultural heritage and resource use traditions yet vary in their dependence on natural resources due to spatially heterogeneous development related to accessibility to the nearest port and a growing tourism industry. This creates an opportunity to use spatial variation as a proxy for temporal change that can be used to study how tourism development alters human-environment dynamics in resource-dependent coastal communities. This research first documents the spatially heterogeneous development via household and community level socio-economic indicators. I then present the findings of shifting human-environment dynamics through an analysis of household livelihoods and diets. Finally, I estimate the impacts of these shifts on environmental sustainability in the form of fishing practices and dependence on natural resources, and social sustainability in form of household subjective wellbeing and food security.

Keywords: Human-environment dynamics, Tourism, Fisheries

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No Country for Young Men/Women? Patterns in Resistance and Refuge for Central American Unaccompanied Alien Children in the US

The migration of unaccompanied alien children (UAC) into the US from Central America's Northern Triangle has grown dramatically in recent years. Before 2011, the number of UAC fluctuated between seven and eight thousand annually; but by 2014, exploded to nearly seventy thousand children. While this influx captured the attention of media outlets, there has been little academic research on the subject. This paper explores the spatial dynamics of this emerging migration trend. I briefly examine push factors (violence and crime in the

Northern Triangle) and pull factors (reunification with family, perceived political openness) driving migration, but focus on where and how these children are settled in the US while they await their immigration court hearings. While some communities welcome UAC, others resist their arrival through protests at the local and state level. I am interested in patterns of community resistance, a relevant issue given that rising US nativist sentiments play a major role in this year's presidential election. I rely on data from the Office of Refugee Resettlement (ORR), Border Patrol interviews with UAC, and information from various non-governmental agencies that assume responsibility for UAC migrants after their apprehension.

Keywords: Immigration, Children, Central America

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Mounds and Meaning: 5000 Years of Landscape Syncretism in the Cosma Basin, Ancash, Peru

The community of Cosma is located at the headwaters of the Nepeña River Valley in Ancash Peru. Situated within a box canyon in the Cordillera Negra Mountains at 2600 masl, the community is made up of agro-pastoralists who utilize the Quechua and Suni ecological zones. Founded in 1714 by the Spanish over what was originally an indigenous settlement, archaeological research within the basin has shown that the area has been heavily occupied since the Preceramic Period (5000 BCE). Contributing to a meaningful and symbolic landscape for the local members of the community, three large multistoried mounds tower over the agricultural fields, a megalithic hilltop fortress, monumental Inca stone-carved boulders, and above ground tombs (locally known as chullpas) suffuse the basin and mountain slopes. Along with the archaeological vestiges present within the landscape, this paper will present on the history of Cosma, which includes its colonial founding as well as its purchasing from the Jimbe hacienda during the 19th century, a fact of pride for the modern day Cosmenos. This paper will also explore the relationship between the prehistoric elements within the Cosma basin and the Colonial influences which can be seen within a syncretized and symbolic landscape.

Keywords: Symbolic Landscape, Syncretism, Peruvian Andes

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Terracing, Land Management and Agricultural Soils in Andagua Valley of the Southern Peruvian Andes

Demographic, socio-political and climatic changes can drastically alter agricultural land management practices, affecting the availability of agriculturally relevant nutrients in the soil. This project investigates the use, reconstruction and abandonment of agricultural terraces and the implications these conditions have on agricultural soil properties of the Andagua Valley in the Western Cordillera of the Southern Peruvian Andes. During the 2016 summer field season, I collected topsoil samples from cultivated and abandoned agricultural terraces between 3229m and 3688m in altitude with a range of aspects and ages. Preliminary observations from the field suggest that sheet erosion due to wall collapse in abandoned agricultural terraces removed the topsoil from terraces on micro-shoulderslopes and micro-backslopes exposing a subsurface compacted clay horizon that also underlays currently cultivated terraces throughout the valley. The eroded topsoil was deposited on lower abandoned terraces leaving a loose loamy sand or coarse sandy loam on the surface. Abandoned and cultivated terraces reconstructed in the past 50 years contain soils of various morphological characteristics similar to those in older cultivated and abandoned terraces. Lab analysis further illuminates effects of land management on the soil systems in the valley and their potential for future agricultural fertility. This project will contribute to past research by providing new empirical and comparative data about agricultural soil properties entrenched within local, regional and global circumstances, and will contribute to conversations about use, reuse and abandonment of agricultural terraces in the southern Andes.

Keywords: Soil, Andes, Agriculture

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Mining in a Time of Impunity in Guatemala: Accountability and Necessary Civil/Criminal Law Reform in Canada

This research presentation is based on the findings of an emergency delegation to Guatemala in May 2016, to re-examine and update documentation on four major mining struggles throughout the country, all related to Canadian (and partially American) owned mining operations. Since 2004, I have worked to document the environmental, human rights and community defense struggles of Indigenous and non-Indigenous communities that have suffered repression and a wide-range of harms caused directly and indirectly by Canadian (and American owned) mining operations. Once again, I underscore the point that the Canadian government and Canadian businesses are earning significant profits while conducting business since the 1990s with Guatemala's genocidal generals, militaries

and corrupted politicians. Some of these same military officials and politicians are facing criminal trials today over corruption and money laundering, as well as for their roles in the genocides and other war crimes of the 1970s and 1980s, but impunity is the more general condition witnessed. Upon re-visiting the mine harmed communities, I argue that Canadians, the Canadian Parliament and the government of Prime Minister Justin Trudeau must work to bring about long overdue legal reforms in Canada so as to hold these companies fully accountable in Canada, legally and politically, for repression, harms and violations they are causing in other countries.

Keywords: Guatemala, Mining, Indigenous

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Reshaping Territories: Alternatives to Traditional Ways of Producing Territory in the Amazon of Ecuador

El presente trabajo estudia estrategias recientes usadas por comunidades indígenas en Ecuador que buscan controlar territorio bajo circunstancias adversas en las que modelos económicos mineros han traído una nueva ola de conflictos por desposesión de tierras en la región. Estas estrategias apuntan a nuevas formas de entender procesos de territorialidad enfocando en aspectos que van más allá de la seguridad material de sus territorios y que están directamente ligados a formas de legitimar su etnicidad y legitimar sus actividades organizativas y económicas. Tomando el caso de la comunidad indígena de Tzawata en la Amazonia Ecuatoriana, se ilustra su creatividad en generar políticas de escala que legitiman su subsistencia económica y su capacidad organizativa a la vez que libran una batalla legal contra una compañía minera por el control de lo que ellos consideran su territorio ancestral. El presente trabajo espera servir como puente entre los marcos teóricos y las realidades prácticas de organizaciones indígenas de base que buscan encontrar estrategias de resistencia y negociación en su lucha por tierras. La autora realizó trabajo de campo en la comunidad de Tzawata por seis meses entre el 2013 y 2016, además ha mantenido comunicación continua con la comunidad en los últimos 2 años completando doce entrevistas estructuradas y semi-estructuradas entre el 2013 y la presente fecha. Además, se usó observación participativa y análisis de contenidos.

Keywords: Territory, Ethnicity, Mining

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Five postulates on climate change and mining: Insights from the literature and preliminary research

Increased impacts from and public attention to climate change have coincided with a dramatic expansion of mining operations in recent years, especially in the Global South. Yet while substantial literature exists on each of these topics independently, little work has been done on how climate change and mining affect each other, and in turn, how this relationship affects society and the environment. This article offers a review of existing literature on this nexus, as well as initial analysis of interviews on the topic in agricultural communities near the Las Bambas copper mine in Apurímac, Peru. We argue that five key elements constitute the relationship between climate change and mining: 1) Their confluence creates a form of "Double Exposure" to negative environmental and economic impacts among vulnerable communities; 2) Mining operations emit greenhouse gases that directly contribute to climate change; 3) Climate change facilitates mining operations in previously inaccessible regions, especially glacial areas; 4) Climate change may make mining operations more difficult, especially in water-scarce regions; and 5) a perceptual link exists between climate change and mining among policymakers and the public that impacts policy related to both.

Keywords: Climate Change, Mining, Development Geography

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Marians Shrines: Challenges of Latin American Religious Heritage

This work brings together the key aspects of the research entitled "Strategies Irradiation Devotional Mariana" (CNPq 2014-2016), whose purpose was to form a "database, information and images" on territorial and symbolic network of 38 Catholic shrines; all of them directly linked to devotion to Mary, Mother of God in popular Catholicism. Invoked under the title of Our Lady of Aparecida or Immaculate Conception, this devotion is, in Brazil and in Latin America, the main symbolic force of support of Catholic culture in contemporary society. The project was developed as the first stage of a study program on religious heritage in irradiation, a basis for understanding the cultural geography of the continent. The study began in search of relations between the Shrine of Aparecida, and 37 other shrines linked to similar Marian devotion. We noted three emerging symbolic processes of diffusion or irradiation in that main sanctuary for the past 35 years, during which his great basilica began to receive million annual visitors. The main objective of the research was to verify and classify the patterns (types) of Marian devotion in the towns (municipalities) where these sanctuaries. Formulated this concept of Municipality-Shrine.

Methodologically, the qualitative evaluation worked with 3 ways of irradiation indicators: carnivalization, touristification and mediatization. The systematization of data and Images allowed the classification of the representativeness of three ways. End establish a model of proximity and remoteness of the reference municipality-shrines, located in Aparecida (SP), or other Marian Shrines of Latin America: Lujan, Quinche, Coromoto, Caacupé, Copacabana, etc.

Keywords: Irradiation, Shrines, Religious Heritage

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Sustainability and Utopianism in the Amazon

Whether it is an industrialist's dream or an environmentalist's paradise, the Amazonian landscape inspires conflicting visions for the region's future. However, what is common among these conflicting visions is their adoption of sustainability discourses and their disconnect from local realities. The Amazon's idealized pure nature continues to inform policy-making that promotes ecological conservation and the construction of a peasant identity that disregards their colonial history. Applying utopianism as a framework to conceptualize these disparities, I analyze how idealizing the region for sustainable development can lead to the realization of a dystopia for local smallholder livelihoods.

Keywords: Utopias and dystopias, Amazon, Sustainable development

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"Un compromiso de todos": Social reproduction and coca control policy in Bolivia

Bolivia's current approach to controlling coca leaf production is an innovative example of experimentation with drug policy reform. A major purpose of the policy is to reduce the violence of anti-narcotics policing that targeted coca farmers in Bolivia from the 1970s through the early 2000s. Bolivian coca leaf is used to make cocaine, but it is also a traditional medicine and food, is economically important to rural livelihoods, and is a political symbol of Morales government. Even as Bolivia's new policy is being seen as a success in terms of improved human rights and a reduction in the amount of land dedicated to coca crops country-wide, coca farmers are facing new threats to social reproduction as they navigate the new program. These include the emergence of a coca-killing fungus, and concerns about agrochemical overuse. While recent approaches to understanding drug trafficking and policing in the Americas have been productively examined through attention to "drug war capitalism," less attention has been paid to the role of social reproduction among the "drug plant" farming communities that do the work of

interpreting, implementing, negotiating, and surviving the drug control policies. In this paper, I draw from ethnographic research to consider what social reproduction can reveal about the challenges of drug control policy reform, and the role of non-human nature in the social reproduction of "drug war capitalism."▯

Keywords: Bolivia, Coca leaf, Drug control policy

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Whose Development?: State and Corporate Discourses of Mining as Development in Guatemala

Over the last decade, mineral resource extraction operations have expanded across the globe. Hailed as a leader in metallic mineral exploitation, Canada plays an increasing role in the global mining economy and international development strategies. Latin America is a top destination for Canadian mining capital with a total value of assets reaching \$90.5 billion in 2014 (Natural Resources Canada 2015). At the same time, Canadian mining companies are involved in a growing number of conflicts over mineral exploitation abroad. This begs the question: Whose development does mining best serve (Power 2003)? This presentation provides a follow-up to preliminary research presented on individual and communal experiences of resistance to a Canadian-owned gold mining operation in Guatemala, now owned by an American company (Pedersen 2014). Building from oppositional community perspectives, the objective of this article is to frame state and corporate discourses of development as they are advanced through policies and practices conceptualized in the Global North, and imposed upon communities in the Global South. Postcolonial theory and critical development studies serve as a framework to analyze Canadian mining diplomacy and development discourses used to justify mineral resource extraction expansion. Additionally, this presentation highlights how Canadian policies and corporate actions reinforce mining as a form of structural violence and neocolonialism.

Keywords: Resource extraction, Development, Nneocolonialism

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Escenarios de vulnerabilidad del paisaje por cambios en la cubierta del suelo en una región de transición ambiental y económica del centro de México

En la región más central de México se localiza el estado de Guanajuato, el cual se encuentra dividido por dos grandes regiones biogeográficas: Neártica y Neotropical, dicha condición imprime características ambientales geológicas, geomorfológicas, climáticas, edafológicas y de la cubierta vegetal contrastantes entre porción sur y norte del estado, lo cual ha resultado en diferentes procesos de uso y transformación de la cubierta vegetal a través del tiempo. El presente trabajo analizó los escenarios de Cambios de la Cubierta del Suelo (CUCS) evaluado la vulnerabilidad del paisaje por CUCS durante el periodo de 2002 a 2011, mediante la utilización de métodos geoestadístico: Regresión Ponderada Geográficamente (RPG), basados en tres procesos de transformación de la cubierta vegetal: deforestación, crecimiento urbano y decremento de áreas agrícolas basados en la Información de Uso del Suelo y Vegetación (2002-20011, INEGI). Utilizando 20 variables explicativas, cuatro de tipo ambiental, cuatro económicas y doce de tipo social, tomadas de información: del Sistema para consulta de Información Censal (SCINCE, INEGI 2010), Recursos Naturales, Censos Económicos (INEGI, 2010) y Consejo de Población y vivienda (CONAPO, 2010). Los resultados arrojaron una relación significativa entre crecimiento urbano y el decremento de áreas agrícolas, explicado por variables de corte socioeconómico presentes en ambientes urbanizados con una dinámica en expansión en la porción sur del estado, mientras para la porción norte fueron las variables explicativas como crecimiento de nuevas vías de acceso y cercanía a pequeñas localidades una relación significativa con los procesos de deforestación.

Keywords: Guanajuato, Suelos, Paisaje

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El reto de ordenar la metrópolis: Un análisis geográfico en base al área Metropolitana de Guadalajara

El primer paso para cambiar el futuro de la ciudad es analizarla, interpretarla y ordenarla. En el área Metropolitana de Guadalajara (México) ha habido, y continúan existiendo, retos que dificultan alcanzar una visión integral de los temas de planificación urbana debido a los diversos intereses y actores que se involucran en el proceso del ordenamiento y gestión de la ciudad. Por otro lado, pareciera que este mismo ejemplo de la segunda ciudad más

importante del país, con sus 4.8 millones de habitantes, y con sus nueve municipios, se convierte en un referente regional e internacional pues pudo lograr un esquema de coordinación metropolitana encaminado a trabajar en favor de la visión de la metrópolis y de los ciudadanos. Con la implementación de un plan integral de carácter intermunicipal que busca una visión a largo plazo para decidir, planear y gestionar el futuro de la ciudad, el Área Metropolitana de Guadalajara está a la vanguardia en temas de coordinación metropolitana y el control de dinámicas urbanas en México. Se presentará desde una perspectiva geográfica el análisis de la situación pasada y contemporánea en temas de la planificación urbana del Área Metropolitana de Guadalajara, así como un diagnóstico de los retos que existieron y existen para implementar una visión metropolitana, a la vez que se hará un enfoque en el valor que tiene un territorio bien planificado (gestión del territorio). Se hace un enfoque específico de cómo la metrópolis ha logrado la instrumentalización del Plan de Ordenamiento Territorial Metropolitano (POTmet).

Keywords: Plan de Ordenamiento Metropolitano, Plataforma de Información Territorial, Guadalajara

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Constructing the Andean Diaspora: State-Based and Immigrant-Led Development Strategies

The Andean countries of Colombia, Ecuador, Peru and Bolivia went from relatively low emigration in the 1960s and 1970s to extremely high rates in the last three decades. Since the 1980s, these states experienced a series of economic and/or political crises that spurred surges in out-migration. Though the rates of emigration have slowed with the global financial crisis that began in 2008, the Andean Exodus is notable with some states estimating that at least 10 percent of their populations reside overseas. The majority of Andean emigrants have settled in the United States, Western Europe (especially Spain and Italy), and other South American states (Venezuela and Argentina). This paper draws upon administrative data, World Bank remittance estimates, and Andean governmental and non-governmental programs to show patterns of migration, remittance flows, and the institutional networks created to support diaspora engagement. It has only been in the past 15 years that policies to engage the diaspora have emerged as Andean governments and migrants themselves recognized the value of forming diasporic linkages to support national development and citizens abroad. The paper is divided into four sections: 1) a description of the Andean exodus, 2) a model for diaspora engagement, 3) a discussion of the policies employed for managing distance and fostering development and 4) a conclusion about the limits of diaspora engagement. This paper will highlight four policy areas where Andean countries have experienced some success: political engagement, direct investment, philanthropy, and capacity building.

Keywords: Diaspora, Andes, Development

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The weak position of smallholders in northwestern Nicaragua: land, labor migration, and climate change adaptation

Smallholder labor migration and its relationship to climate change adaptation has received increasing attention, with migration often represented either as part of adaptive livelihood diversification or as symptomatic of a lack of in-place adaptive capacity. Using a case study, we focus on the relationship between labor migration, livelihood diversification, and climate change to further a more nuanced understanding of "migration as adaptation." Through empirical fieldwork in northwestern Nicaragua, we explore the role of labor migration in smallholder household production and reproduction, as families confront increasingly difficult climatic conditions for agricultural production and a relative absence of the state within a neoliberal political economy. What role does migration play in this smallholder farming system? How does labor migration unfold for these families and with what outcomes? Our analysis draws on household surveys and qualitative interviews and focus groups we carried out in the municipality of Somotillo, in northwestern Nicaragua, over three years (2013-2015). Our findings demonstrate that household labor migration neither facilitates adaptation to climate change nor reflects a failure to adapt, but rather reflects the weak position of smallholders in interlocking relations of power and the relative land scarcity experienced by many. We argue that labor migration barely maintains semi-subsistence agricultural production and reinforces existing social inequalities, raising questions regarding a conceptualization of "migration as adaptation" and the benefits of this type of livelihood diversification.

Keywords: Livelihood diversification, Drought, South-south migration

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Shifting environmental governance: The influence of social-environmental coalitions in Valdivia, Chile

Economic development in Latin America rests heavily on extractive industries, leading to an increasing number of environmental conflicts. Environmental governance constitute a key entrance point to understand how different actors involved in the use of natural resources relate to each other and to nature. There is extensive literature that differentiates governance modes and the specific power balance between state, market and civil society

in the process. However, it is critical to understand the changes between such modes, and more importantly, what factors are pushing these transformations. This is particularly critical in Latin America, a region with strong inequalities and weak institutions. In this study we focus on the influence of socio-environmental movements in how decisions over natural resources are changing. By presenting a detailed case-study in the city of Valdivia, Chile, we argue that socio-environmental movements can have effects that go beyond their particular agendas and, under certain conditions, expand their influence to foster more inclusive forms of governance. In 2004, an industrial investment project owned by CELCO, one of the world's biggest cellulose exporters, began its operation in this city. The pulp-mill produced a severe damage in a Ramsar-protected wetland, causing death to hundreds of swans near. As a response, an environmental movement emerged to confront CELCO and its project, with consequences that transcended the defense of the wetland and swans. Our results explain how the socio-environmental movement in Valdivia influenced regional actors, institutions and discourses, leading to a more democratic form of environmental governance.

Keywords: Environmental movements, Natural resource governance, Effective mobilization

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The Myth of Managua: Landscape and Place in Post-Earthquake Nicaragua

The devastating earthquake that shook Managua, Nicaragua in late December 1973 had profound, far-reaching impacts on the people and landscape of Nicaragua's capital. Relief efforts immediately after the earthquake suffered from widespread corruption and mismanagement, magnifying the human tragedy and galvanizing the rising tide of popular discontent and resistance that eventually culminated in the Sandinista Revolution of 1979. The city center, site of the most extensive damage, was largely abandoned and left in ruins as armed conflicts diverted government resources from its redevelopment. Yet this formerly vibrant core has maintained a symbolic role as the heart of the now-sprawling modern city. The revolution was celebrated here, and competing visions of Nicaragua's past and future have been inscribed through memorials, government buildings, parks, and ongoing efforts to reclaim the historic city center. This paper explores the nature of landscape change in the old city center since the chaotic events of the 1970s, with particular emphasis on the ways in which competing visions of Nicaragua's past, present, and future have been manipulated, promoted, and reflected in the still-evolving material landscape.

Keywords: Managua, Nicaragua, Landscape

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Pastoralist Participation and Water Security in the Era of Water Scarcity: Comparing the Wayuu of northern Colombia and the Kuria of northern Tanzania

Parallels can be drawn between indigenous and pastoralist peoples in different geographic settings, including adaptability, traditional knowledge, and common property resource management, but also unequal relations with the state, loss of land, loss of autonomy and overall marginalization. The Wayuu people of the Guajira Peninsula of northern Colombia are the conjoining of these indigenous and pastoral identities—including their multiple misrepresentations—forming a distinctive New World indigenous pastoral society. Like most pastoral societies, the Wayuu have undergone pressure to modernize and sedentarize, via different strategies that highlight and perpetuate the uneven power relations between them and external public and private institutions. Wayuu encounters with water development projects tend to be deeply political, pitting local governance against external government forces, usually resulting in a weakening of their autonomy and resilience practices. This paper uses a political ecology framework to understand how water security, participation and knowledge—both traditional and scientific—are produced, appropriated and negotiated on the water scarce Guajira Peninsula of northern Colombia. We compared the Wayuu to the Kuria, an agro-pastoral people of northern Tanzania to provide another perspective from the East African context of the benefits and limitations of pastoralist participation in water development. In both settings, human-land relationships have been forcibly changed through land reforms and views on private property that have negatively impacted these marginalized groups. Our comparative study explores how traditional knowledge can be incorporated into existing scientific methods and recognizes that this takes effort and initiative by water development projects and water governance institutions.

Keywords: Water governance, Traditional knowledge, Wayuu pastoralists

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The Social and Kinship Nature of Tsimane Residence Patterns in Lowland Bolivia

Residence among small-scale societies like hunters and gatherers and part-time horticulturalists is often thought to be driven primarily by kinship rules stemming from biological theories of relatedness like Hamilton's rule. However many anthropologists and geographers have discovered that individuals may regularly violate social norms with respect to residence rules, opting instead for opportunism when better circumstances present themselves or moving away when close ties and social contracts have soured. Through repeated repositioning, individuals eventually end up nearer to others that

are more likely to share with them, which is the main form of economy present in small-scale societies, namely that of social exchange. This data collected among Tsimane women of lowland Bolivia investigates how individual residence is highly predicted by social network variables such as kinship, friendship, and cooperative helpers. The study also shows that individuals living farther away are more likely to be socially negatively marked, such that women are more likely to think those living farther away are talking about them behind their back, are mean spirited and are less interpersonally attractive. In general, women living close are more often reported with pleasant character traits than those living farther away, who are more likely to be assigned negative traits. Taken as a whole, the data show a predisposition for those living in social exchange societies to live with and near kin, friends and helpers, and to assign these individuals better qualities than distant others in order to encourage interactions of social exchange by promoting interpersonal attractiveness.

Keywords: Social networks, Residence, Kinship

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The Clean Development Mechanism in Latin America: The Case of Hydropower

The Clean Development Mechanism (CDM) is a market-based solution to climate change that was conceived as a flexible strategy for compliance with the 1997 Kyoto Protocol. It allows industrialized countries and companies to offset their own emissions by investing in greenhouse gas reductions and sustainable development in developing countries, coupling climate change mitigation with sustainable development in a theoretically win-win model. Hydropower, a historically controversial renewable energy source that is experiencing somewhat of a renaissance in the 21st century, is the second most common technology under the CDM, including both large and small scale projects. While hydropower offers a lower carbon alternative to fossil fuels, it often imparts significant social and ecological impacts that may reduce its ability to contribute to sustainable development. This paper analyzes the distribution of hydropower in the application of the CDM in South and Central America and Mexico in order to understand its role in regional level development. It utilizes case-specific examples from the Brazilian Amazon to better understand how sustainable development is defined and how projects are translated to local contexts.

Keywords: Environmental governance, Hydropower, Clean Development Mechanism

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El Grito de la Selva at the COP: Indigenous Perspectives on Climate Change, Development and a Changing Amazonia

The Amazon rainforest plays vital roles in the maintenance of carbon cycles, biodiversity, and water cycles. However, the forests of Amazonia continue to change due to variation in the climate, and the expansion of development in the form of roads, deforestation, and extractive pursuits. Indigenous Amazonians observe both alterations in the climate and development expansion, but their observations and knowledge about these dynamics can be muted by regional hierarchies of power. Indigenous workshops and international meetings provide Indigenous Amazonians opportunities to organize and then expound their knowledge to global audiences. This research brings together results from three indigenous workshops on climate change and environmental justice in the remote Amazon borderlands of Peru. Results informed declarations, discourse, and presentations shared at the XX and XXI United Nations Conference of the Parties meetings in Lima, Peru and Paris, France. Participant observation at the global conferences and associated events showed Indigenous Amazonians to be adept at negotiating a variety of different arenas to share their knowledge and perspective on a changing Amazonia. International meetings also provide opportunities for Indigenous peoples to network and share experiences with traditional peoples ranging from the Scandinavian Saami to the Maori of New Zealand, but also including other Indigenous peoples from the Amazon itself.

Keywords: Amazonia, Indigenous, Climate Change

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U.S.-Mexico Water Cooperation and Conflict

The history of water management along the U.S.-Mexico border is characterized by periods of relative cooperation, tension, and conflict. In the face of different water governance regimes, efforts at water cooperation have experienced considerable challenges. Within this type of polycentric governance, achieving persistent cooperation is met with many barriers. In the face of surface water scarcity and increased reliance on groundwater resources, improved water security requires stakeholders and managers to behave in cooperative ways. On both sides of the border, from the international level down to the local level, effective communication, cooperation, and agreement over water issues is highly desirable. The broader water security literature on conflict and cooperation often places country-level interactions on a linear scale, with conflict and cooperation on opposite ends of the spectrum. Alternatively, Zeitoun and Mirumachi (2008) propose that conflict and cooperation often co-exist in binational water interactions. This paper analyzes the historical progression of conflict and cooperation between the U.S. and Mexico over the

Rio Grande Basin by utilizing Mirumachi's Transboundary Water Interaction Nexus (TWINS) matrix. The TWINS matrix places cooperation and conflict on a two-dimensional scale and tracks changes over time. This is a useful tool for analyzing the dynamic influences on cooperation or conflict. Emphasis will be placed on understanding the ways in which the TWINS approach provides a more complete and accurate picture of U.S.-Mexico transboundary water governance. The hope is that this picture will provide new insights into achieving greater cooperation in the management of shared water resources.

Keywords: Transboundary water governance, Conflict and cooperation, Water security

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A dinâmica do setor sucroenergético e suas implicações no Pontal do Paranapanema/São Paulo - Brasil

Nesse paper analisamos os impactos da dinâmica do setor sucroenergético no Pontal do Paranapanema ao longo dos anos 2000 e 2010. Nesse período houve grande crescimento da produção e área canavieira, decorrentes, sobretudo, da chegada da Odebrechet Agroindustrial na região, que adquiriu a Destilaria Alcídia e implantou a Usina Conquista do Pontal (UCP). Inicialmente, as usinas do grupo Odebrechet contrataram grande número de trabalhadores, mas nos últimos anos elas tem dispensado boa parte dos funcionários, ampliando o desemprego. Problema que foi agravado após a desativação da Alcídia em 2015, somando-se a outras duas usinas que também foram desativadas recentemente. A expansão canavieira contribuiu para o crescimento do preço da terra (superior à média paulista) e paralisação implantação de novos assentamentos rurais, além de problemas decorrentes da proximidade destes com usinas e canaviais (pulverização aérea, proliferação de moscas etc.). Desta forma, a expansão sucroenergética sobrepõe-se a elementos tradicionais da questão agrária na região, como a ocupação irregular das terras devolutas por meio de grandes estabelecimentos rurais. Estas áreas são aptas à implantação de projetos de assentamentos rurais, mas isto têm sido dificultado por conta da indisposição dos ocupantes irregulares em negociarem a entrega das terras devolutas mediante acordos celebrados com o Estado (indenização), que têm preferido arrendar terras para o cultivo de cana-de-açúcar devido a ampliação da renda da terra.

Keywords: Setor sucroenergético, Questão agrária, Pontal do Paranapanema

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The Geographic Imagination of Iconic Elements in Latin American and Nordic Products and Services

Increasing globalization challenges domestic producers of goods and services that must compete with the robust supply chains, distribution channels, pricing schema, and promotional campaigns of multinational firms. This research employs a most-similar systems approach in examining to what extent consumers identify national iconic elements of brands in selected welfare state Latin American nations (Chile, Cuba, Argentina) and Denmark. The two-stage research design first draws on primary data gathered from over 1500 consumers responding to top-of-mind inquiries about leading national brands and services. Then, using focus group results producing 34,000 words of text, I hypothesized whether top-10 brands explained by geographic and national iconic elements—what I call the "geographic imagination"—(folklore, myth, national historic, illustrious figures, landscape) differed from hedonic, functional, and brand attributes. ANOVA results show that there are significant differences between the iconic, hedonic, functional and brand attributes. Principal components analysis indicates an inverse relationship between premium products and services at one end, and a services continuum at the other. I conclude that self-concept and nostalgic attachments to leading country brands reflect cognitive and affective attachments that align with local physical and cultural geographies in ways previously unexplored in the marketing and geographic literatures.

Keywords: Geographic imagination, Iconic brands, Products and services

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Technofixes and Water Security in Vulnerable Mexican Border Communities: Assessing Puerto Palomas

In 2002, Chihuahua Governor Martinez-Garcia announced a future of water security for the border town of Puerto Palomas. With a \$5.18-million-dollar infrastructure project funded by the NADB, Palomas could finally "wage the final battle against pollution and the lack of wastewater treatment." Water security, from the human development perspective, is having affordable access to clean and reliable water. The U.S.-Mexico border is highly vulnerable to water stress, and 1.7 million people living in colonias have historically lacked municipal water and sanitation infrastructure. The colonia of Palomas, where all 5,000 residents gained consistent access to chlorinated village water, was deemed a rare success in the borderlands by decision makers. Nearly 15-years later, I used a mixed-methods research design to assess the status of water security asking: What causes household water (in)security in Palomas, and how can access to clean and reliable water be improved? Water quality, water quantity and water affect were measured using a quantitative survey

of 100 households, 30 qualitative semi-structured interviews, and participant observation of water practices. In this paper, I argue the emphasis on universal coverage in water security is insufficient and should be reframed to emphasize the role of cultures of water and water affect. Preliminary findings indicate Palomas households remain connected to a reliable and chlorinated, municipal water tap. However, despite state-of-the art water technology, the majority of surveyed participants reported feeling uncomfortable or scared of the tap water and inconsistently accessed RO water because of transportation limitations. The results indicate Palomas still suffers from water insecurity despite the technological "fixes" that have been employed.

Keywords: Water Security, Borderlands, Infrastructure

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Mining maps and their potential for the study of colonial Spanish America

The extraction of precious metals in Spain's American territories was a central source of revenue for the crown. In some regions, above all in the Andes and northern New Spain, mining came to dominate and transform local economies, environments, and social structures. The search for minerals and their exploitation was reflected in and shaped by the production of maps and plans. Maps showing the location—confirmed or anticipatory—of mineral deposits were drawn throughout the colonial period. By the late eighteenth century, however, cartographic depictions of mining sites above and below ground proliferated. The characteristics and purpose of these maps varied widely. Whereas some maps were produced by colonial officials with formal cartographic training, others were simple sketch maps, drawn by mine owners or prospectors. Although hundreds of mining maps, overwhelmingly in manuscript form, are preserved in the archives of Spain and Latin America, they have received only limited scholarly attention. Drawing primarily on sources in Seville's Archivo General de Indias, this exploratory paper surveys the characteristics of colonial mining maps and considers their potential for study. What insights might these maps provide into colonial notions of New World mineral geographies? What can they teach us about colonial understandings of mining spaces, the role of cartography in late colonial mining projects, and the transatlantic circulation of knowledge? What kinds of stories that go beyond the projects and ideals of the state and its agents might these cartographic sources unlock?

Keywords: Cartography, Mining, Colonialism

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Latin America in story and pictures: cultural-geographic images and discourses in the U.S. Good Neighbor Policy (1933-1945)

The so-called Good Neighbor Policy emerged as a form of cultural diplomacy during the government of President Franklin Delano Roosevelt. Different from previous strategies for the establishment of international relations, this "soft" approach to foreign policies promised non-intervention and interference in domestic affairs of other countries and aimed at the mutual understanding of different cultures. Originally proposed as a global proposal, the Good Neighbor Policy gained particular importance in Latin America, initially triggered by private foundations and then by the Office of Coordinator of Inter-American Affairs (CIAA). Special attention was given to the interchange of cultural aspects, resulting in a substantial production of books, music and movies and the diffusion of regional peculiarities through mass media. Though the Good Neighbor Policy has been widely discussed in general terms, there is still a lack of studies on the cultural-geographic dimension of this initiative, especially on the production of geographic images and stereotypes. The aim of this paper is to present an analysis of two popular picture book series (Pictured Geography and Good Neighbor Series) written and illustrated by well-known journalists, writers and artists in the 1940s, that introduce, depict and describe Latin American countries for the broader population in the United States. The reading between the lines of the stories and pictures reveals a moral geography of the region through the lens of an American perspective and opens up a debate on the impacts of images and discourse on the shaping of worldviews and understanding of different cultures.

Keywords: Good Neighbor Policy, Geographic images and stereotypes, Moral geography.

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Don Ángel's Candelaria prehispánica

José Ángel Soler Graham, campechano, explorer, contemporary and friend, had worked river boats in his youth and managed gangs of chicleros. He had ranged through the Candelaria basin in the south of the state of Campeche and knew its forests and wetlands well. In the 1990's he interpreted its environment and Prehispanic remains by means of uninhibited identifications and striking, unconventional cartography, raising a series of productive research questions.

Keywords: Mexico, Prehispanic, cartography

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Geoecologia de los Paisajes y la Planificación de Cuencas Hidrográficas en Ceará, Brasil

En la actualidad, la planificación de cuencas hidrográficas como categoría de análisis espacial tiene importancia cada vez mayor, pues puede establecer principios para la planificación de cuencas hidrográficas por medio de la concepción de la Geoecología de los Paisajes. Cuenca hidrográfica es un geosistema natural, formado por la interacción dialéctica de sus componentes naturales y por sus diferentes grados de transformación antropogénica. Considerar la cuenca como sistema ambiental, requiere entender las relaciones entre sus diversos componentes naturales y socioeconómicos. Mateo, Silva y Cavalcanti (2004) destacan la Geoecología como fundamento teórico-metodológico adecuado para comprender interacciones de la estructura, su funcionamiento, la dinámica y evolución, en el ámbito espacial y territorial. Rodriguez y Silva (2016), acrescentan que la planificación ambiental sobre bases geológicas en cuencas hidrográficas actúan para: i) identificar, delimitar y clasificar sus unidades espaciales; ii) evaluar relaciones entre los espacios y los paisajes; iii) determinar potencialidades de los recursos y préstamos ambientales de las diferentes unidades y de la cuenca como un todo; iv) establecer funciones ecológicas y sociales; v) definir problemas y estados ambientales; vi) verificar factores y causas que condujeron al orden o desorden espacial y ambiental y vii) efectivizar propuestas de ordenamiento territorial de la cuenca. Un modelo de planificación fue realizado en las cuencas de los ríos São Gonçalo y Palmeira, Ceará, Brasil, representando cartográficamente las zonificaciones ambiental y propositiva, adecuadas a la planificación y la gestión territorial.

Keywords: Planificación, Geoecología de los Paisajes, Cuencas Hidrográficas

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Contentious Land Change in Amazonia: Implications for Global Environmental Change

Deforestation, particularly in the tropics, contributes to climate change as an important source of greenhouse gas emissions. Thus, carbon sequestration in tree biomass has emerged as a policy instrument for nations seeking to fulfill their commitments to the 2015 Paris agreement. Forest conservation can prove challenging in countries like Brazil, with abundant forest resources and policies aimed at improving rural livelihoods. This article presents a property-scale study of deforestation in the Brazilian Amazon in order to

address conservation challenges associated with such policies. Specifically, the article addresses the impact of land conflict on forest cover in the lower Amazon basin. Land conflict, globally associated with agrarian reform, has waxed and waned in the Brazilian Amazon over the past three decades, a period that has suffered hundreds of fatalities. The article uses a panel analysis with a unique data set including (1) a multi-decadal satellite image series; (2) cadastral maps for large holdings and agrarian reform settlements; and (3) an 8000 page newspaper archive detailing land conflict on individual properties. The analysis reveals that properties with conflict show a modest but statistically significant deforestation increment beyond those without it. However, deforestation on conflict-free properties typically exceeds forestry code limits, possibly in reaction to concerns about land tenure in a conflictive environment. The results suggest that forested nations desiring to sequester carbon should resolve agrarian reform issues far from the forest resource base. They should also enforce existing conservation laws at the level of the property holder.

Keywords: Agrarian reform, Deforestation, Global environmental change

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Mapping Cultural Landscapes of the Yucatan Peninsula from a Mayan Perspective

In Mexico and other parts of the world mapping continues to be dominated by government agencies. Their official cartographies are widely accepted as objective and authoritative depictions of reality, but they often ignore important relationships between indigenous peoples and their ancestral territories. This research, based on participatory mapping and other ethnographic methods, investigates how Mayan people in the Yucatan conceptualize the landscapes surrounding their villages. Mapping done in three neighbouring communities revealed numerous sites of cultural significance not found on existing maps, including cenotes (i.e., sinkholes) and other landforms found in karst terrain. Our findings show that Mayan people have a shared terminology for geographic features, which is embedded in the toponyms that they use. More broadly, the research shows that they have their own distinctive geographic knowledges and ways of conceptualizing the landscape.

Keywords: Cultural landscapes, Indigenous peoples, Participatory mapping

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Witnessing a Strong Sense of Community in the Chacarita of Asuncion, Paraguay

Since the late 1950s cities throughout Latin America have witnessed exponential growth in squatter settlements. Dominated by self-help housing and in situ accretion, these

settlements are home to as much as 85% of all residents within Latin American cities. Governmental policies towards squatter settlements have vacillated from antagonism to acceptance. In the 1950s and 1960s the growth of squatter settlements was met with strong resistance and forced removal. In the 1970s scholars helped governments appreciate the economic and social benefits of informal settlements. Beginning in the late 1990s the most common approach was to condemn the lands and push for urban development projects that would convert the informal settlement into a prime real estate investment. This approach reinforces the commonly held perception that squatter settlements are dangerous places where filth, social deprivation, and illicit activities prevail. As squatter settlements have grown throughout Latin American cities, more scholarship is needed on the characteristics of informal settlements and the people who reside in them. To date, most research has focused on demand for housing, quality of units, and support services. Little attention has been given to the social qualities particularly the sense of community found within squatter settlements. This paper uses the Chacarita (an informal settlement in Asuncion, Paraguay) as a case study to expose the area's sense of community. With links to existing theory, this paper illustrates that the Chacarita possesses all the hallmarks of a strong sense of community including membership, social interaction, integration, and shared emotional connection.

Keywords: Squatter Settlements, Paraguay, Sense of Community

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Open Mapping for Resilience: YouthMappers in Latin America

YouthMappers university students worldwide have united to create and use open spatial data to directly address development challenges for some of the world's most impoverished countries, including in Latin America. This network of student-led chapters organizes a global community of learners and scholars to work locally and collaboratively to create resilient communities. The program supports meaningful global learning experiences; creates geospatial data where it is needed most; builds a socially engaged citizenry; enhances long-term scientific capacity throughout the world; and fosters youth exchange and leadership. Capitalizing on web-based open geospatial technologies in general, and the OpenStreetMap platform in particular, supply is linked to demand for geographic information to meet specific development objectives in unmapped places of the world where the United States Agency for International Development works to end extreme poverty. Projects include disaster planning and recovery in Ecuador that responded to the Office of Foreign Disaster Assistance call for road and building data in the wake of 2015 volcanic activity near Quito, and which grew into additional support for open maps immediately put to use by the humanitarian and relief agencies to assist victims of the April 2016 earthquake. In Colombia, YouthMappers chapters from various universities are uniting to remotely map post-conflict areas in ways that assist local communities to request aid for rebuilding infrastructure. They are also field mapping to support

communities in crisis due to drought and flooding in La Guajira. USAID supports this program through a grant from the U.S. Global Development Lab's GeoCenter. Founding partners are Texas Tech, George Washington University and West Virginia University.

Keywords: Mapping, Youth, Resilience

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Reading the Text of Hemingway's Cuban Landscapes

Hemingway landscapes and associated tourism in Cuba represent evocative topics for geographical inquiry for a couple of reasons. First and perhaps most significantly, Hemingway tourism, and tourism in general in Cuba, exists side by side with the larger socialist economy and political system that limits and even forbids locals from interacting with the very things and places foreigners desire and visit. And second, Hemingway was an American, yet his landscape and image in Cuba is vigorously preserved and promoted. In Jacobo Timerman's 1990 article in *The New Yorker*, "A Summer in the Revolution: 1987" he noted that "with the exception of the worship of Fidel Castro and Che Guevara, no worship is promoted more in Cuba than the worship of Ernest Hemingway." This relationship and promotion is especially interesting given the acerbic political relationship that has existed (before the recent thaw) between the United States and Cuba for more than 50 years. This presentation discusses three locations in the literary landscape of writer Ernest Hemingway in Cuba; Finca Vigía, his long time home located 12 miles outside Havana; his favorite bar El Floridita, found in the heart of old Havana; and the Marina Hemingway, located just outside Havana. This presentation discusses what these landmarks tell us about Hemingway's image and meanings within a changing Cuba, and how does the public, broadly speaking, view and use the landmarks and Hemingway.

Keywords: Cuba, Ernest Hemingway, Literary Landscapes

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From Camino Real to Bellamy Road: Retracing Florida's Spanish Mission Trail

Beginning as early as 1633, Franciscans in North Florida's Spanish Borderlands began establishing missions between St. Augustine and San Luis, a prominent Apalachee village located in present day Tallahassee. The Camino Real, presumably following older indigenous paths, linked the missions and Spanish garrison at San Luis with St. Augustine. In 1826, the Camino Real's surviving remnants became part of Florida's first federally funded road when congress mandated that a new road connecting St. Augustine and Pensacola follow the old Spanish mission trail as much as possible. A well-known

plantation owner, John Bellamy, was contracted to build the eastern half of the road between Tallahassee and St. Augustine which eventually became known as the Bellamy Road. The east-west running Bellamy Road opened North Florida to settlement but eventually fell into disuse as later roads, and eventually railroads, followed settlement farther south into the Florida peninsula. This research examines existing portions and explores current landscapes of the Spanish mission trail and Bellamy Road between Tallahassee and St. Augustine. Historic maps, such as a 1778 map of the Spanish mission trail by Joseph Purcell, were used to determine the road's location. Field work during the summers of 2011-2013 included driving and photographing over one hundred miles along the publicly accessible sections of the Bellamy Road, paved and unpaved, between Tallahassee and St. Augustine.

Keywords: Spanish Borderlands, Spanish mission trail-Camino Real, Florida

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Bob Marley: Post-Development Incarnate

Bob Marley is legendarily remembered for his role in diffusing reggae worldwide and his anti-establishment Rastafarian lifestyle. However, pop culture depictions often glaze over the deeper meanings and messages of his lyrics and life. Here Bob Marley's music and life experiences in Jamaica, and beyond, are linked to the historical periods of international development from the colonial era to independence and modernization, into structuralism and dependency, and onward into neoliberalism. In making this journey it becomes clear that Marley's message of self-determination, international solidarity, cultural pluralism and equality, empowerment and participation, and grassroots 'bottom-up' local knowledge preceded, yet encompasses, these same elements of the post-development debate. The result is both a powerful teaching tool for students and a gentle reminder to practitioners of international development to include post-development concerns into their studies and work.

Keywords: Development, Caribbean, Post-Development

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Urban water insecurity in drought-affected cities of Northeast Brazil

Brazil's semi-arid Northeast is affected by successive droughts. The more recent drought is considered one of the worst in 50 years, affecting 20.8 million people dependent on surface water. Reservoirs serving interior cities are drying up: currently a majority of reservoirs

serving interior cities are at less than 9% capacity, with many expected to dry up completely by January 2017. Despite several elaborate policies and projects to improve water supply, the urban domestic water supply is insufficient. The preliminary research presented highlights the issue of water (in)security in one municipality, Forquilha, in the interior of Ceará in northeastern Brazil. We observe that for the first time rural areas may be more water secure during this epic drought, and thus seem to indicate an inversion of household water insecurity. Unlike the past, where rural areas were the most water insecure, we hypothesize that under current conditions, urban residents face worse water insecurity at the household level than rural areas. We have observed the increased number of cisterns and water storage infrastructure due to recent state policies, thus helping rural families store water until the next rains. However, in urban areas without the household scale infrastructure to store water, families are dependent on government and private sectors that most often have been unable to meet the population's needs in relation water supply.

Keywords: Water security, Northeast Brazil, Drought

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Regional Duality and the State Role: Housing Reconstruction in the Peruvian Highlands After the Pisco Earthquake 2007

Contrary to popular opinion, nation-state margins are not only the physical frontiers between countries, margins are also built on the differences among categorical pairs, such as between regions within the same country. Peru is a paradigmatic case in Latin America in regard to regional contrasts between the coast and the highlands. The crisis after Pisco Earthquake on August 15 2007, revealed the regional duality in Peru as rural settlements in the highlands were left behind in the rebuilding process. People from these villages waited for central government "assistance" that never arrived, in contrast to coastal cities that attracted governmental emergency measures towards fulfilling housing critical needs. Drawing from the field work in rural locations above 2700 m.a.s.l. in Huaytara district in Huancavelica, this work focuses on the crisis resolution path in order to identify to what extend the regional category of sierra identified as of rugged geography that entails an absent State, manifests in the way that housing needs were met after the earthquake. This work argues that costa-sierra regional duality, which characterizes the Peruvian national space, manifests itself in critical situations but not through the geographical features but through historical processes of production of space related to disinvestment in the highlands that created relegated or "illegible" territories. On the other hand, regional duality neither could be reduced to the expression that "there is no State" for highland villages; it is more an expression of a relational State role that interacts with non-state organizations showing a State by proxy association.

Keywords: Peruvian highlands, Rural housing, Disasters

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Adaptive governance for resilience of peri-urban socioecological systems

In light of the ongoing international debate on governance, and given the complex challenges of governing the expansion and urban development that transforms the metropolitan interstices and their agricultural and natural landscapes, this paper explores the adaptive governance approaches that could be applied to these types of political and spatial landscapes to achieve the transition towards strengthening urban resilience. The main features of the institutional systems and the integration of local actors and communities in the resilient processes are outlined. From a portrait of the literature review, conceptual criteria are discussed to carry out future research on the topic of adaptive governance for peri-urban socioecological systems resilience.

Keywords: Adaptive governance, Urban resilience, Peri-urban socioecological systems

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A challenge to territory: indigenous peoples' access to forest resources in two Peruvian native communities

Indigenous organizations in Latin America consider control over traditional territories as the paramount condition for the reproduction and manifestation of their cultural lives, in addition to the security of their livelihoods. Concurrently, community - based conservation and forestry is increasingly recognized as a sound strategy for curbing deforestation. Unfortunately, neoliberal policies seeking to colonize the rainforest frontier have historically configured an unfavorable milieu in Peru. Such is the case of the Madre de Dios region of Peru, where the Harakmbut people resist the encroachment of gold miners and illegal loggers into their legally titled territories. Building on insights from Ribot and Peluso's (2003) "A Theory of Access", I analyze the relationship between property rights, capital, the market, and access to forest resources in two Harakmbut native communities. My fieldwork data from interviews, focus groups, participatory mapping, and transect walks show that, owing to the legacies of colonialism, most households in the native communities of Puerto Luz and Boca Ishiriwe are bound to either disadvantageous capitalist relationships or unsustainable livelihood options in their own legally titled territories. My research thus challenges the idea that territorial control leads to autonomy. Community-based forestry projects and decolonization movements focusing on securing indigenous rights must acknowledge these relationships in order to be successful.

Keywords: Property and access, Territory, Indigenous peoples

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Aportaciones de la Escuela de Berkeley a la Geografía mexicana, primera generación (1930-1960)

Nuestro objetivo es analizar las aportaciones teóricas y prácticas de la Escuela de Berkeley a la geografía mexicana, específicamente a través del análisis histórico e historiográfico de la primera generación de geógrafos adiestrados en México. Es decir, nos enfocamos en aquellos que realizaron sus investigaciones doctorales entre las décadas de 1930 y 1960: Fred Kniffen, Peveril Meigs III, Brigham Arnold, Robert West, Donald Brand, Hommer Aschmann, Dan Stanislawski, Harry L. Sawatzky y Henry Bruman. Las investigaciones realizadas en el marco de Berkeley son más que pertinentes si las consideramos a la luz de nuevos bríos, sobre todo en el contexto científico actual caracterizado por una insistente interdisciplinarietà. Desde su origen, la tradición saueriana postula la combinación estructurada de procedimientos metodológicos de disciplinas diversas: Antropología, Arqueología, Historia, Economía y Ecología. Además, el enfoque cultural de Berkeley considera una serie de temas que hoy son clave en los estudios ambientales y territoriales: la reconstrucción histórica de paisajes y el cambio de uso suelo y de cubiertas vegetales. Es decir, resultan en un enfoque y métodos que, replanteados a partir de necesidades presentes, pueden contribuir a los procedimientos integrales que vinculen de forma coherente los componentes socioculturales y biofísicos de la geografía, con una sólida base epistemológica.

Keywords: Escuela de Berkeley, Mexico, Paisajes

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Políticas ambientales y configuración territorial en las comunidades de la Selva Lacandona: algunas implicaciones para la conservación

En la investigación se tomaron como caso de estudio comunidades indígenas de la Selva Lacandona cercanas a la Reserva de la Biosfera de Montes Azules (REBIMA) en el estado de Chiapas, las cuales estructuran territorialmente el uso del espacio en patrones concéntricos (conservación, actividades productivas y asentamientos humanos). Con métodos etnográficos y cartográficos se encontró: 1) Las conservación en las comunidades significa mantener áreas forestales para utilizar los recursos maderables como combustible, en la construcción de viviendas, silvicultura, y el recurso hídrico para actividades cotidianas y económicas. Sin embargo 2) esta relación entre los habitantes y su entorno se ha modificado con la implementación de la política ambiental, la cual no impacta directamente en la conservación sino en la transformación de los medios de subsistencia (de la

silvicultura/agricultura al sector servicios). Transición en la que la selva se aprovecha paisajísticamente, masa forestal por la cual también reciben transferencias condicionadas para la conservación. No obstante, 3) en los últimos 10 años las condiciones climáticas han cambiado notoriamente atribuido a la deforestación, fenómeno que desencadena la disminución de biodiversidad, afectación en la actividad agrícola, modificaciones en los hábitos alimenticios, condiciones de salud y pérdida de tradiciones locales. 4) En los procesos de deforestación influyen factores exógenos como la participación activa de las compañías madereras cuyo impacto es meso-regional. Los factores endógenos son: la toma de decisiones sobre las relaciones establecidas entre agentes gubernamentales y compañías madereras; las dinámicas locales demográficas y económicas; y percepción local sobre el uso de los recursos naturales.

Keywords: Políticas ambientales, Territorios indígenas, Conservación

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Political Ecology of Road Building in Amazonia: A Multi-Stakeholder Analysis of the Alto Purús Road Project, Perú

In August 2016, for the second time in five years, a group of politicians submitted a bill to the Peruvian congress to build a controversial road to connect the isolated Purús region with the national transportation network of Peru and the Interoceanic highway. The proposed road will cross a national park, a reserve for isolated Indigenous peoples, Indigenous territories, and forestry concessions while shadowing the Brazilian border. In 2012, University of Richmond researchers presented their GIS analysis of the road to Peru's congress to open a round table debate that resulted in the failure of the first road building bill. Our current study combines that spatial research with analysis of the discourse of both the proponents and critics of the road project to better understand how these actors perceive roads, landscapes, and livelihoods in the remote Amazon borderlands. National politicians, business leaders, local townspeople, and religious leaders who support the road argue that the Purús province needs to integrate with the rest of Peru to alleviate poverty and improve health services. On the other hand, most local Indigenous residents and environmental groups contend that the construction of the Purús-Iñapari road not only threatens the environment and Indigenous peoples, but also will facilitate illegal logging and drug trafficking. Both factions employ a range of communication strategies and mediums to persuade residents and outsiders of the efficacy of their argument.

Keywords: Amazonia, Roads, Conservation

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Flipping South America: the Rise of Amazonian Industry

Amazonian deforestation rates have declined over the past decade, due in part to applications of environmental policy. Nevertheless, alongside such successes are energetic efforts to develop the region via such multi-national efforts as represented by the Initiative for the Integration of the Regional Infrastructure of South America (IIRSA). The IIRSA blueprint seeks to transform Amazonia into a source of hydropower and a multi-modal hub, connecting roads, waterways, and rail lines to new port facilities. Using the "New Economic Geography" and data from a Brazilian Input-Output table, we show how this could spark the formation of a manufacturing core in the Amazon valley, drawing tens of millions of workers to the region, and possibly rendering São Paulo a tropical rust belt. Implementation of the IIRSA infrastructure could rapidly accelerate Amazonian industrialization, with unknown ecological consequences.

Keywords: Amazonia, Tipping Point, Catastrophe

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Smallholder adaptation to drought in Costa Rica's crony capitalist rice economy

In realizing that adaptation hegemonies are normative processes involving coercion and control, we develop an institutionally sensitive political economy of adaptation to environmental change to understand class restructuring and stratification in rural development in northwest Costa Rica. We argue that the goals of current framings of adaptation in political economy should be broadened to include the organization of production and the appropriation and realization of capital flows, which may stratify social classes and determine vulnerability to environmental change. Relying on this framing, we find that in Costa Rica's rice economy, crony capitalism resulted in state-sponsored rural development as the national economy moved toward a new neoliberal model. Cronies reorganized rice production and re-appropriated capital flows in the rice economy, which marginalized smallholder farmers and ultimately undermined drought adaptation efforts. Relying on these findings, we show that critical state responses to neoliberal changes "not neoliberal changes themselves—stratified class and produced vulnerability. In doing so, we offer a more comprehensive and pertinent understanding of class stratification as people

struggle with the political economic effects of neoliberalization, and therefore we break from the common refrain in much of the critical literature on neoliberal development.

Keywords: Drought, Costa Rica, Crony capitalism

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Emergent complexity in an Afro-Brazilian landscape: Five centuries of agroecological development on Bahia's Dendê Coast

This paper analyzes the long-term development of palm oil landscapes in the northeastern Brazilian state of Bahia. In contrast to the agroindustrial monocultures that dominate global production, palm oil in Bahia emerges from a biodiverse cultural landscape constructed through five centuries of transatlantic socio-ecological exchange. Native to West Africa, African oil palms (*Elaeis guineensis* Jacq.) diffused to the New World with colonial overseas expansion, becoming established in Bahia by the seventeenth century. There the palms helped form what became the Dendê Coast (Costa do Dendê)—named after the Kimbundu Bantu-inspired term for palm oil, an essential ingredient in various Afro-Brazilian culinary and religious expressions. The Dendê Coast thus represents an Afro-Brazilian landscape, operating as the ecological base for Afro-Brazilian cultures practiced and revered throughout the country. Beginning in the mid-twentieth century, a series of modern development interventions sought to reduce the complex landscapes of the Dendê Coast to oil palm monocultures of an improved hybrid variety. Yet despite those recurrent efforts, complex polycultural landscapes continue to dominate land use in the region. Drawing on ethnography, landscape interpretations, archives, and geospatial analysis, this paper analyzes the historical development of Bahia's palm oil economy, recounting a *longue durée* of socio-ecological changes on the Dendê Coast. The paper integrates recent geographical treatments of the African diaspora with theories of legibility and complexity thinking to comprehend the ongoing proliferation of Bahia's traditional palm oil landscapes despite top-down promotion of modern monocultures.

Keywords: Political ecology, Palm oil, Critical agrarian studies

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Hydropower Impacts on "Heterotopias of Conflict" in the Eastern Amazon

Contemporary analyses investigating the social impacts of hydropower projects fail to address the spatial and temporal components of resource conflict in the Eastern Amazon region. This paper reviews historical conflicts endemic from development oriented projects near the municipality of Marabá, Pará, Brazil. Marabá, Pará represents a site of historical

and contemporary conflict potentially exacerbated by the introduction of a hydropower project. Drawing on the spatialization of contentious politics, this paper utilizes Foucault's concept of "Heterotopias" to elaborate on spatial dimensions of social conflict in the Eastern Amazon. Social conflicts near the study site are spatially oriented across time and denote distinct spaces and places of class, ethnic, and gendered struggles. Utilizing historical spatial data pertaining to land cover, land-use, and land conflict to form a heuristic spatial model of dam impacts, this paper argues current plans for hydropower development will directly and indirectly impact historical sites of social conflict. These areas of impact overlap sites of historical and contemporary conflicts including the landless movement for agrarian reform, indigenous people's struggle for land, and the gendered struggle of female babaáçu harvesters against deforestation. Finally, this paper concludes the expansion of infrastructure development in the Eastern Amazon is an ongoing historical processes that possesses the potential to reignite social conflicts over resources.

Keywords: Social Conflict, Development, Political Ecology

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Sustaining the Commons along the Pacific Coast of Northern Mexico

Fisher communities along the northern Pacific coast of the Mexican state of Baja California Sur (BCS) are the result of years of interactions between this biologically unique and rich physical environment and the activities of the cultural groups that have inhabited the region. Our research analyzed the evolution of these communities through the use of mixed-methods research (ethnography, environmental history, participatory GIS). Results demonstrate a well-managed fishery through co-op co-management, however there are challenges to the sustainability of the current cultural and physical landscape.

Keywords: Baja California, Commons, Fishing

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Post 2014 and 2016: Sporting mega-events and tourism in Brazil's host cities

Until 2007, Brazil had not hosted any mega or major international sporting events since the 1950 FIFA World Cup and the 1963 Pan American Games. The 2007 Pan American Games, 2014 FIFA World Cup and 2016 Summer Olympics represent Brazil's sporting decade. While Brazil is already regarded as a popular tourism destination in South America, the hosting of two sporting mega-events is expected to increase the nation's exposure internationally and physically develop or regenerate cities across the country with

renovated or new sports facilities and venues—including new amenities for tourism. Given the vastness of Brazil as a country and with the primary tourism markets oriented to the coast, hosting events and competitions in remote peripheral areas lend to challenges of sustainable regeneration and development. Past and on-going development initiatives in Brazil focus on developing cities and regions away from the coast as part of the country's attempt to modernising peripheral cities and regions. This chapter offers a geographical analysis of 2014 FIFA World Cup and 2016 Summer Olympics host cities by addressing notions of scale, core and periphery, followed by discussions addressing sustainable regeneration and directions for future research in Brazil.

Keywords: Brazil, Cities, Core-Periphery

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Mapping Regional Landscape by Using OpenstreetMap (OSM): A Case Study to Understand Forest Patterns in Maya Zone, Mexico

The Maya Zone of the Yucatan Peninsula is home to the most densely forested region in Mexico, which has a massive amount of forest cover and is also well known as native Mayan land. Human activities are altering land patterns and structures in the region, resulting in both negative and positive effects. The production of a land cover/use map at the scale of the entire Yucatan Peninsula region helps researchers, decision makers, and land owners better understand land-use and land management practices. A forest patterns map over a large extent at high spatial resolution also is a heavily computation task but is critical to most regions. The classification of land-use at the regional scale presents two major challenges: the need for a large data set of training points, and the time- and labor-intensive computational requirements of classifier modeling for such large scale study areas. However, recent developments in cloud computing, collaborative mapping, and user-generated content platforms, such as volunteered geographic information (VGI), have spawned a new era in mapping and visualizing the Earth. Google Earth Engine is a platform designed for cloud-based mapping with a strong computing power. In this study, we proposed a new approach to generating forest land cover map and quantifying road-caused forest fragmentation by using OpenstreetMap in conjunction with remote sensing dataset stored in Google Earth Engine. Additionally, the landscape metrics produced after incorporating OpenStreetMap (OSM) with the forest spatial pattern layers from our output indicated significant levels of forest fragmentation in Yucatan peninsula.

Keywords: Land cover, Maya Zone, Google Earth Engine

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The Past, Present, and Future of Cultural Biogeography: A Perspective through the Works of William M. Denevan and Daniel W. Gade

Cultural biogeography, or the relations of cultural practices to plant and animal distributions and ecology, is a significant theme in research and scholarship in geography and related fields. In geography this theme is closely associated with human-environment approaches in general and particularly the cultural-historical ecology of the Sauerian Berkeley School and its network across diverse universities in the United States and elsewhere. This paper traces the development of cultural biogeography through the contributions of two prominent research scholars, William M. Denevan and Daniel W. Gade. The paper utilizes in-depth personal reflection on extensive personal experiences as a faculty colleague at the University of Wisconsin-Madison (with Denevan) and in the field in the southern Peruvian Andes and the Cusco region (with Gade). It provides comparisons and contrasts of their research, scholarship, and writing styles and key works, as well as the evolution within each individual's approach to cultural biogeography. It demonstrates, details, and accounts for the combination of both significant similarities and notable differences. It identifies the influences on and impacts of these works, including links to other scholars and present-day approaches in cultural biogeography. Focus is placed on concepts, methods, findings, and frameworks, along with the evidences of change and continuity in cultural biogeography. Finally, significant emphasis is also placed on gaining insights into current cultural biogeography and the recent and new approaches to understanding the interplay of culture and biology.

Keywords: Cultural biogeography, History of geography and human-environment studies, Culture-and-biology approaches

